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U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

SNOW AND ICE BULLETIN.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.
Willis L. Moore, Chief U. S. Weather Bureau.

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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.
As far as practicable all reports of snow and ice are printed in the table.
H.L.A.

WASHINGTON, D. C., *December 3, 1912.*

DEPTH OF SNOW.

Heavy snow occurred near the end of October in North Dakota and portions of adjoining States, and it was reported that a considerable amount had accumulated in the high mountains from Wyoming northward by the end of the month.

During November but little snow appears to have occurred in any portion of the country until toward the end of the month, the snow areas being confined largely, however, to the Lake region, New England, and portions of the Middle Atlantic States.

On November 24 some snow occurred in the Lake region, and during the 25th snow was rather general from Pennsylvania northward over New York and New England, the accumulated depths at points in the mountain regions of New York ranging from 12 to 15 inches. During the 26th and 27th considerable additional snow occurred in northern New York, the fall at Canton amounting to 24 inches. During the 27th and 28th a storm moving along the Atlantic coast gave considerable snow over the districts east of the Appalachian Mountains from the interior of South Carolina northward to New England. Under the influence of warm weather this covering rapidly disappeared over the southern districts, and at 8 p. m. of Monday, December 2, but little snow remained on the ground, save in portions of the interior of New York and northern New England, and at a few points in the upper Lake region.

Throughout the entire middle and western portions of the country the ground is still bare, save in portions of the high mountains of the West, where small amounts have accumulated.

At the same period last year the northern portion of the country from North Dakota eastward was covered to considerable depths and there was from 3 to 5 inches on the ground in the Appalachian Mountain region from West Virginia northward.

ICE IN RIVERS AND HARBORS.

On account of the unusual warmth practically no ice has yet formed on the rivers and lakes, the only appreciable amount being reported from the Red River of the North.

At the same period of 1911 ice to the thickness of nearly 1 foot covered the upper Missouri River and other northern streams from the upper Lakes westward to the mountains, and there was a considerable amount along the western and southern shores of Lake Superior and in the interior of Maine.

The following special reports have been received:

Brattleboro, Vt., December 2.—Snow can be seen back on the hills.

Albany, N. Y., December 3.—There is no snow reported in the Hudson and Mohawk valleys, excepting 1 inch at Corinth. Both rivers are open, as far as reported.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 2, 1912.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Colorado.	*Inches*	*Inches*	*Michigan*—Cont'd	*Inches*	*Inches*	*New York*—Cont'd	*Inches*	*Inches*
Durango	T.	.....	Big Rapids	T.	.....	Bouckville	4	.....
Connecticut.			Cadillac	T.	.....	Canton	1	.....
West Cornwall	T.	.....	Calumet	T.	.....	Cooperstown	T.	.....
Delaware.			Grand Rapids	T.	.....	Corinth	1	.....
Millsboro	T.	.....	Harrisville	1	.....	Lake Placid	8	.....
Idaho.			Houghton	1	0.0	Norwich	1	.....
Boise	T.	.....	Iron Mountain	T.	.....	Ogdensburg	4	.....
Iowa.			Ironwood	5	.....	Saranac Lake	6	.....
Charles City	T.	.....	Marquette	1	0.0	*South Dakota.*		
Davenport	T.	0.0	Rock	3	.....	Pierre	0	*
Des Moines	T.	0.0	Sault Ste. Marie	T.	0.0	Yankton	0	†
Sioux City	0	*	*Minnesota.*					
Maine.			Duluth	T.	0.0	*Utah.*		
Buckfield	5	.....	Grand Meadow	T.	.....	Salt Lake City	2	.....
Cornish	T.	.....	Moorhead	0	4.0	*Vermont.*		
Gardiner	0	*	State Sanatorium	T.	.....	Brattleboro	0	†
Greenville	6	0.0	*Missouri.*			Northfield	2	.....
Lewiston	T.	†	Maryville	1	.....	St. Johnsbury	T.	.....
Millinocket	9	.....	*Nebraska.*			*Wisconsin.*		
Orono	2	.....	North Platte	T.	.....	Koepenick	1	.....
Van Buren	6	.....	*New Hampshire.*			Mount Horeb	T.	.....
Massachusetts.			Bethlehem	3	.....	*Wyoming.*		
Mansfield	T.	.....	*New York.*			Lander	T.	.....
Michigan.			Addison	T.	.....	Yellowstone Park	3	.....
Alpena	T.	0.0	Beaver River	8	.....			

* Floating ice. † Shore ice. T. indicates trace.

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WASHINGTON, D. C., *December 10, 1912.*

DEPTH OF SNOW.

Although the past week was rather stormy over the northern districts from the Rocky Mountains eastward, there was but little snow, and as no general storm crossed the Mountain regions of the West only light amounts of snow fell in any of those districts.

The general rains from the lower Missouri Valley northeastward to the Lake region, Middle Atlantic States, and New England during the 5th and 6th carried off much of the snow that remained on the ground in the two last-named districts at the end of the preceding week, and at the close of the week just past there was but little snow on the ground in the Appalachian Mountain region or in New England.

In the upper Lake region and surrounding districts there was a small increase in the depths over those reported at the end of the preceding week, and at a few points in Upper Michigan depths ranging from 10 inches to 1 foot are reported.

In the mountain regions of the west light falls of snow occurred in portions of Arizona, New Mexico, and Colorado, but as little had accumulated previously the amounts in the mountains are still slight, although there appears to have been little melting during the week.

Compared with the same period of 1911, there is now somewhat less snow in the mountains of Utah, Colorado, and Wyoming, but elsewhere the amounts are not materially different.

THICKNESS OF ICE.

Moderately cold weather over the Northwest permitted the formation of some ice in the streams of that region during the week, and by the end it had attained a thickness of several inches at points in the Missouri River from South Dakota northward towards its source, while floating ice is reported as far southward as Kansas City. In the upper Mississippi only shore or floating ice is reported, but the Red River of the North is frozen over, and other smaller streams in that vicinity appear to be ice bound.

In the Great Lakes some ice has formed on the shores of Lake Superior, but little or none is reported from the other lakes. Practically no ice has yet formed on the lakes and rivers of New England, and none is reported from the Ohio River or its tributaries.

Compared with the same period of 1911, there is now much less ice in the Missouri River and its tributaries and other streams of the Northwest, but in other districts the conditions are quite similar to those of one year ago, save in the interior of Maine, where there was then a considerable amount of ice.

The following special reports have been received:

Brattleboro, Vt., December 9.—Snow can be seen back on the hills.

Albany, N. Y., December 10.—No snow is reported in the Hudson Valley, but in the Mohawk Valley there is some, ranging in depth from half an inch at Little Falls to 1 inch at Utica. No ice is reported in either river.

St. Joseph, Mo., December 9.—At the north bridge here the Missouri River is blocked with soft ice.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 9, 1912.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Minnesota—Cont'd.*	*Inches*	*Inches*	*Ohio.*	*Inches*	*Inches*
Flagstaff	3	.....	Fort Ripley	T.	.....	Sandusky	0	†
Colorado.			Glencoe	T.	.....	*Pennsylvania.*		
Denver	T.	.....	Grand Meadow	T.	.....	Butler	T.	.....
Durango	T.	.....	Hinckley	3	.....	Clarion	1	.....
Grand Junction	T.	.....	International Falls	2	.....	Erie	1	0.0
Iowa.			Mankato	1	.....	Franklin	T.	.....
Davenport	0	*	Milan	T.	.....	Indiana	T.	.....
Des Moines	0	1.0	Minneapolis	T.	.....	Johnstown	1	.....
Dubuque	0	*	Moorhead	T.	7.0	Meadville	2	.....
Estherville	1	.....	New Richland	1	.....	Parkers Landing	T.	.....
Keokuk	0	*	Reeds	1	.....	Pittsburg	T.	0.0
Sioux City	T.	†	St. Paul	T.	†	Saltsburg	T.	.....
Maine.			State Sanatorium	1	.....	Towanda	T.	.....
Gardiner	0	*	Virginia	2	.....	Warren	1	.....
Greenville	2	0.0	*Missouri.*			West Newton	T.	.....
Lewiston	T.	†	Kansas City	0	*	*South Dakota.*		
Maryland.			*Montana.*			Huron	0	3.5
Oakland	T.	.....	Kalispell	T.	.....	Pierre	0	†
Princess Anne	T.	.....	*Nebraska.*			Yankton	1	4.0
Massachusetts.			North Platte	T.	.....	*Utah.*		
Adams	T.	.....	Omaha	0	*	Salt Lake City	2	.....
Michigan.			*Nevada.*			*Vermont.*		
Alpena	1	†	Reno	T.	0.0	Brattleboro	0	†
Cadillac	1	.....	*New Hampshire.*			Burlington	T.	0.0
Calumet	12	.....	Bethlehem	T.	.....	Northfield	1	.....
Escanaba	1	†	*New Jersey.*			*Virginia.*		
Grand Haven	T.	.....	Newton	T.	.....	Cape Henry	T.	.....
Houghton	10	1.5	*New Mexico.*			*West Virginia.*		
Iron Mountain	1	.....	Roswell	T.	.....	Bayard	1	.....
Iron River	4	.....	Santa Fe	T.	.....	Elkins	T.	0.0
Ironwood	11	.....	*New York.*			Fairmont	T.	.....
Mackinaw	5	.....	Addison	T.	.....	Williamson	T.	.....
Manistee	T.	.....	Buffalo	T.	0.0	*Wisconsin.*		
Marquette	4	0.0	Canton	3	.....	Green Bay	0	1.0
Newberry	2	.....	Herkimer	T.	.....	Koepenick	3	.....
Port Huron	T.	0.5	Lake Placid	5	.....	La Crosse	0	†
St. Ignace	11	.....	Malone	4	.....	Medford	2	.....
Sault Ste. Marie	1	0.0	Oswego	T.	0.0	Mount Horeb	T.	.....
South Haven	4	.....	Rochester	T.	0.0	Viroqua	T.	.....
Minnesota.			Saranac Lake	3	.....	Wausau	1	.....
Angus	1	.....	Syracuse	T.	.....	*Wyoming.*		
Collegeville	T.	.....	*North Dakota.*			Cheyenne	T.	.....
Duluth	1	6.0	Bismarck	T.	†	Lander	T.	.....
Ely	2	.....	Devils Lake	T.	.....	Yellowstone Park	3	.....
Fergur Falls	1	.....	Williston	0	*			

* Floating ice. † Shore ice. T. indicates trace.

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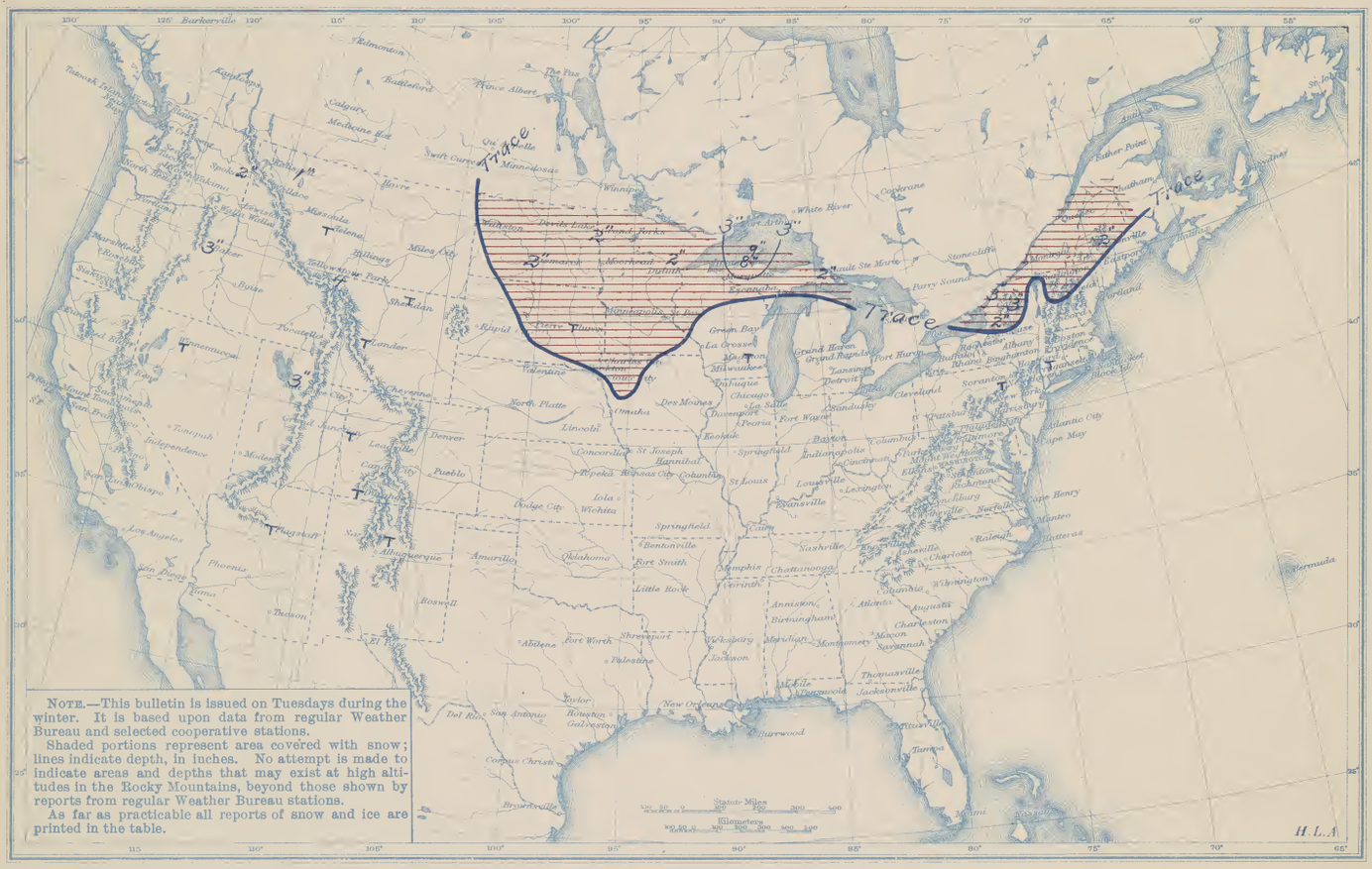
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Statute Miles
Kilometers
H. L. A.

WASHINGTON, D. C., *December 17, 1912.*

DEPTH OF SNOW.

The week just passed was remarkably free from storms of any character over the greater portion of the country, and but little snow or rain appears to have fallen during the week.

Small amounts of snow occurred in the middle Rocky Mountain region on Wednesday, and there were flurries in the Lake region on the same date, continuing during Thursday; and some snow occurred during Monday the 16th in the Missouri Valley in connection with a storm moving from the middle Plains region on that date and central in the upper Missouri Valley this morning, at which time local snows prevail in the Missouri and upper Mississippi valleys and in the Lake Superior district.

Snow occurred locally in the far Northwest on Monday the 16th, especially in the highlands of Washington and Oregon, and at points in Idaho and Montana.

For the week, as a whole, there was a general diminution in the snow depths over all eastern districts and a light increase in portions of the Dakotas and the northern Rocky Mountain and northern Plateau districts. Only small areas in northern New York and the interior of New England are now snow covered, and the covering is but slight in the upper Michigan Peninsula and thence westward to the Dakotas.

In the Rocky Mountain and Plateau regions there is little snow at the lower levels, and probably but slight additions have been made to the amounts accumulated in the high mountains, where the depths still appear much below the average.

Compared with the same period of 1911 the snow-covered area is now much less, especially to eastward of the Rocky Mountains.

THICKNESS OF ICE.

With the exception of a moderate cold wave that moved from the upper Missouri Valley to the Mississippi and Ohio valleys, the northern portion of the Gulf States, and the Atlantic seaboard during Wednesday and Thursday, the weather of the week just past was everywhere generally warm for the season of the year. As a result little additional ice was formed over the amounts reported last week, and in a few localities there has been a slight reduction in the thickness.

In the Missouri River only floating or shore ice is reported as far north as Bismarck, but it is probably ice bound in its upper reaches, the thickness at Williston, N. Dak., being about 6 inches.

A slight increase in thickness has occurred in the Red River of the North and other smaller streams in that locality, but the upper Mississippi is still open throughout, although some shore or floating ice is reported as far south as Hannibal.

The Ohio River and its tributaries, as well as the rivers of the Atlantic seaboard from the Hudson southward, are still generally free of ice, and only small amounts are reported from New England, save in the interior of Maine, where as much as 9 inches is reported.

Small increases in the ice thickness have occurred in some of the harbors of Lake Superior and in the smaller bays of western Lake Michigan, but elsewhere in the Lake region but little ice has formed as yet.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 16, 1912.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Minnesota*—Cont'd.	*Inches*	*Inches*	*North Dakota.*	*Inches*	*Inches*
Flagstaff	T.	.....	Duluth	T.	7.0	Bismarck	2	†
Colorado.			Ely	2	.....	Devils Lake	1	.....
Durango	T.	.....	Fort Ripley	T.	.....	Grand Forks	2	.....
Grand Junction	T.	.....	Glencoe	T.	.....	Williston	T.	6.0
Leadville	1	.....	Mankato	T.	.....	*Ohio.*		
Connecticut.			Moorhead	1	10.0	Sandusky	0	2.0
West Cornwall	T.	.....	New Richland	T.	.....	Toledo	0	†
Idaho.			St. Paul	T.	†	*Oregon.*		
Boise	T.	.....	State Sanatorium	1	.....	Baker	3	.....
Indiana.			Virginia	2	.....	*Pennsylvania.*		
Terre Haute	0	0.5	*Missouri.*			Drifton	T.	.....
Iowa.			Hannibal	0	†	Erie	0	†
Carroll	T.	.....	St. Joseph	0	†	*South Dakota.*		
Des Moines	0	0.5	*Montana.*			Huron	T.	5.5
Dubuque	0	‡	Helena	T.	.....	Pierre	T.	†
Estherville	T.	.....	Kalispell	1	.....	Yankton	T.	†
Keokuk	0	*	*Nebraska.*			*Utah.*		
Sioux City	0	†	Omaha	0	‡	Salt Lake City	3	.....
Maine.			*Nevada.*			*Vermont.*		
Gardiner	0	2.0	Winnemucca	T.	.....	Brattleboro	T.	2.0
Greenville	1	9.0	*New Hampshire.*			Northfield	T.	.....
Lewiston	0	1.0	Bethlehem	T.	.....	*Washington.*		
Millinocket	2	.....	*New Mexico.*			Spokane	2	.....
Michigan.			Santa Fe	T.	.....	*West Virginia.*		
Alpena	T.	†	*New York.*			Elkins	0	†
Calumet	9	.....	Beaver River	10	.....	*Wisconsin.*		
Escanaba	T.	†	Buffalo	0	†	Ashland	1	.....
Houghton	8	3.0	Canton	T.	.....	Green Bay	0	4.5
Iron Mountain	T.	.....	Lake Placid	3	.....	La Crosse	0	†
Iron River	3	.....	Lowville	2	.....	Lakemills	T.	.....
Marquette	2	0.0	Malone	1	.....	Medford	1	.....
Newberry	1	.....	Ogdensburg	3	.....	Spooner	1	.....
Port Huron	0	*	Oswego	2	0.0	*Wyoming.*		
Sault Ste. Marie	2	*	Saranac Lake	2	.....	Lander	T.	.....
Minnesota.			Trenton Falls	3	.....	Sheridan	T.	.....
Angus	T.	.....				Yellowstone Park	4	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. T. indicates trace.

The following special reports have been received:

Gardiner, Me., December 16.—Lumbering operations are delayed in all sections of Maine, owing to mild weather.

Albany, N. Y., December 17.—There is no snow reported in the Hudson and Mohawk valleys, except 3 inches at Trenton Falls. As far as reported, there is no ice in either river.

Pittsburg, Pa., December 16.—There is now no snow over the watersheds of western Pennsylvania.

Dubuque, Iowa, December 16.—The ice in the Mississippi River is thought to be about 2 inches thick, but is becoming soft and therefore unsafe to measure.

P. C. DAY, *Climatologist and Chief of Division.*

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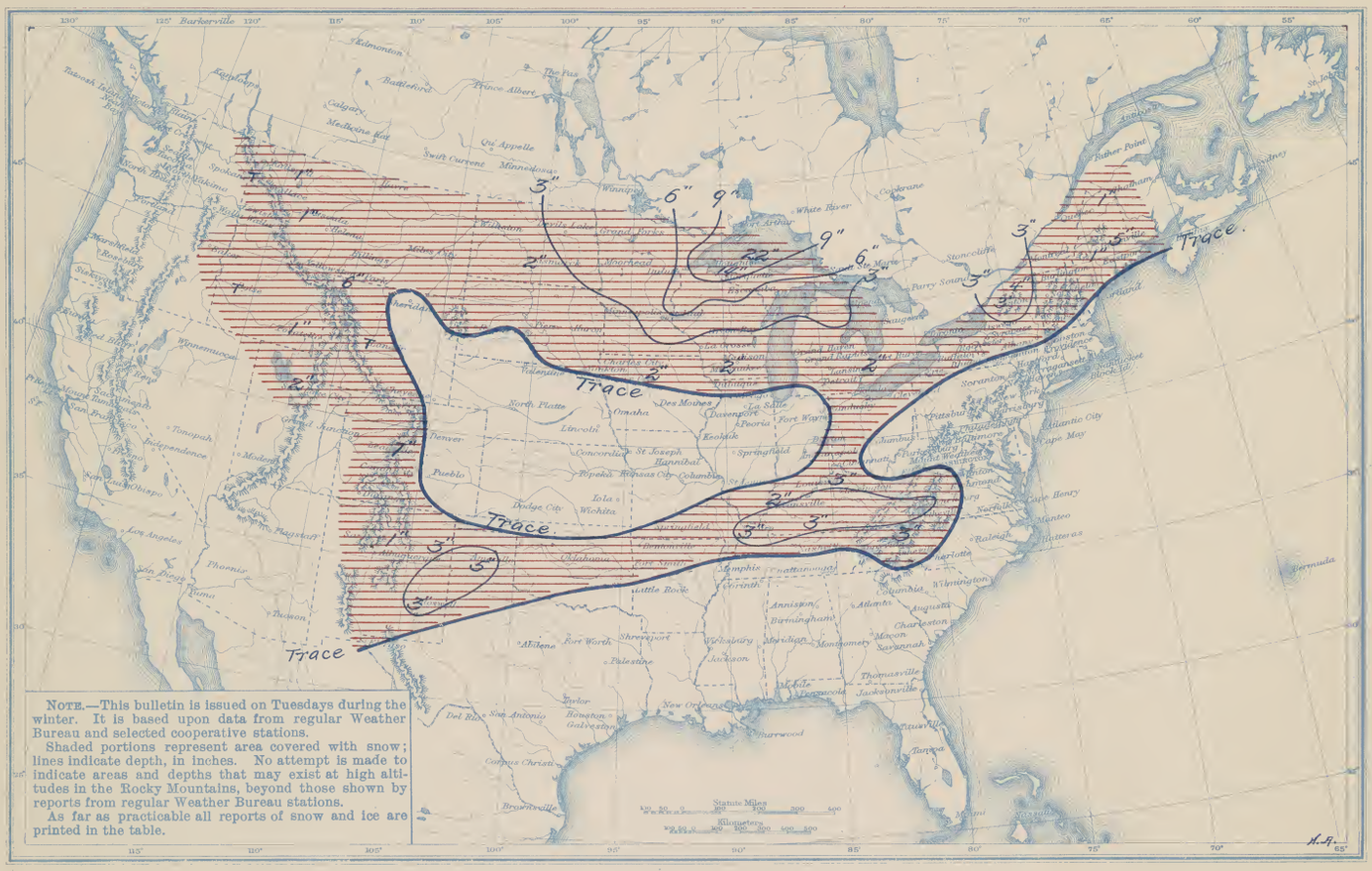

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WASHINGTON, D. C., *December 26, 1912.*

DEPTH OF SNOW.

The storm referred to in the last issue of this bulletin as central on the 17th over the upper Mississippi Valley, moved to the northward of the Great Lakes during Wednesday, accompanied by light to moderate snowfall in the upper Mississippi Valley and Lake region. A second storm that had overspread the Ohio Valley and lower Lake region Wednesday and moved to the New England coast by Thursday morning, was accompanied by rain and snow over much of the northeastern portion of the country.

Only light local snows prevailed in other portions of the country during the week until the 23d, when a low-pressure area moved rapidly from the Gulf States northeastward to the middle Atlantic coast by Tuesday morning, accompanied by moderate to heavy snows from the middle Mississippi and lower Ohio valleys eastward to the Atlantic coast and northward to New England. At the 8 p. m. observation of Monday, however, the snow-covered area from this storm was confined to the southern portion of the Appalachian Mountain region, and thence westward over a narrow strip to western Texas and eastern New Mexico, where in the last-named districts depths from 3 to 5 inches had fallen.

At the 8 p. m. observation of Monday the 23d, the snow-covered area in addition to that referred to above was confined to the northern portions of New England and New York, the Lake region and the upper portions of the Mississippi and Missouri valleys, and the elevated portions of the mountain districts of the West.

In the upper Michigan Peninsula and the northern portions of Wisconsin and Minnesota and over eastern North Dakota the depths ranged from 4 to 20 inches, the heaviest amounts being reported along the southern shore of Lake Superior.

In the mountain regions of the West there was but little snowfall during the week, save in portions of Colorado and New Mexico, where there was a moderate fall near the end of the week.

The amount of snow in the western mountains is still much less than usual at this period of the year.

THICKNESS OF ICE.

Continued moderate temperatures during the past week throughout all portions of the country prevented the formation of any additional ice save on the streams and lakes of the more northern districts.

All the larger streams therefore remain comparatively free of ice throughout the greater part of their courses, except the Red River of the North, which is probably closed over its entire course.

In the Missouri River only floating or shore ice is reported from Bismarck southward, and there has been but a slight increase during the week in the thickness of ice in the upper part of its course.

The Mississippi River is generally open throughout, except in the vicinity of La Crosse, Wis., although shore or floating ice is reported as far south as Hannibal, Mo.

The Ohio River is free of ice, as are its tributaries also, save in some of the elevated districts, where small amounts have formed; and the rivers of the Atlantic coast from the Hudson southward are likewise still open. In New England there has been some increase during the week, and in the interior of Maine the thickness on the lakes and rivers now ranges from 6 inches to nearly 1 foot.

In the Lake region there has been a considerable increase in the amount over western Lake Superior, but elsewhere the increase has been slight, and only small amounts are reported from any of the harbors of the Lower Lakes.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 23, 1912.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors etc.
Arkansas.	*Inches*	*Inches*	*Michigan—Cont'd.*	*Inches*	*Inches*	*Ohio.*	*Inches*	*Inches*
Bentonville	T.	.....	Mancelona	4	.....	Bangorville	T.	.....
Fort Smith	T.	.....	Manistee	T.	.....	Cincinnati	T.	0.0
Colorado.			Marquette	9	0.0	Garrettsville	1	.....
Denver	T.	.....	Port Huron	2	1.0	Sandusky	1	1.5
Durango	T.	.....	Saginaw	T.	†	Tiffin	2	.....
Leadville	7	.....	St. Ignace	3	.....	Toledo	T.	1.0
Connecticut.			Sault Ste. Marie	6	*	*Oklahoma.*		
West Cornwall	T.	.....	*Minnesota.*			Oklahoma	T.	.....
Idaho.			Angus	3	.....	*Oregon.*		
Boise	T.	.....	Duluth	11	12.0	Baker	T.	.....
Pocatello	1	.....	Ely	6	.....	*Pennsylvania.*		
Illinois.			Hinckley	6	.....	Clarion	T.	.....
Cairo	3	0.0	Mankato	3	.....	Erie	1	†
Peoria	0	1.0	Milan	1	.....	Franklin	1	.....
Indiana.			Minneapolis	4	.....	Greenville	T.	.....
Evansville	2	0.0	Moorhead	4	12.0	Parkers Landing	T.	.....
Jeffersonville	1	.....	Reeds	4	.....	Warren	1	.....
Richmond	T.	.....	St. Paul	6	†	*Tennessee.*		
Iowa.			Virginia	4	.....	Nashville	2	0.0
Davenport	0	*	*Missouri.*			*Texas.*		
Des Moines	0	4.0	Hannibal	0	*†	Amarillo	5	.....
Dubuque	T.	†	St. Joseph	0	*	*Utah.*		
Forest City	2	.....	*Montana.*			Salt Lake City	2	.....
Keokuk	0	*	Kalispell	1	.....	*Vermont.*		
Sioux City	0	†	Miles City	T.	.....	Brattleboro	0	3.0
Kentucky.			Missoula	1	.....	Northfield	T.	.....
Bowling Green	3	.....	*Nebraska.*			*Virginia.*		
Lexington	3	.....	Omaha	0	†	Lynchburg	1	0.0
Louisville	1	0.0	*New Hampshire.*			Wytheville	4	.....
Maine.			Bethlehem	1	.....	*Washington.*		
Bangor	T.	2.0	*New Mexico.*			Spokane	T.	.....
Cornish	T.	.....	Roswell	3	.....	*West Virginia.*		
Eastport	1	0.0	Santa Fe	1	.....	Elkins	T.	1.0
Gardiner	0	4.0	*New York.*			*Wisconsin.*		
Greenville	1	11.5	Albany	0	†	Green Bay	3	4.5
Lewiston	0	6.0	Buffalo	2	†	Koepenick	6	.....
Millinocket	5	.....	Canton	3	.....	La Crosse	T.	3.0
Orono	1	.....	Herkimer	T.	.....	Lakemills	1	.....
Van Buren	1	.....	Ithaca	T.	.....	Medford	5	.....
Massachusetts.			Lake Placid	5	.....	Milwaukee	T.	.....
Adams	T.	.....	Little Falls	T.	.....	Mount Horeb	2	.....
Michigan.			Lowville	6	.....	Racine	T.	.....
Alpena	1	3.5	Malone	4	.....	Spooner	6	.....
Ann Arbor	1	.....	Oswego	1	0.0	*Wyoming.*		
Big Rapids	2	.....	Rochester	2	1.0	Lander	T.	.....
Cadillac	2	.....	Saranac Lake	5	.....	Yellowstone Park	6	.....
Calumet	22	.....	Syracuse	2	.....			
Detroit	1	*	Watertown	1	.....			
Escanaba	4	†	*North Carolina.*					
Grand Rapids	1	.....	Asheville	T.	.....			
Harrisville	4	.....	Charlotte	T.	.....			
Houghton	13	5.0	*North Dakota.*					
Iron Mountain	5	.....	Bismarck	2	†			
Ironwood	14	.....	Devils Lake	4	.....			
Lansing	T.	.....	Williston	T.	6.5			

* Floating ice. † Shore ice. T. indicates trace.

The following special reports have been received:

Brattleboro, Vt., December 23.—There is some snow back on the hills.

Hartford, Conn., December 24.—The snow on the ground Monday averaged 2 inches in depth over the extreme upper Connecticut watershed, the Housatonic and other portions of the Connecticut watershed having then no snow. By this morning the present storm has covered the State of Connecticut to depths of about 6 inches.

Albany, N. Y., December 24.—On Monday there was no snow in the Hudson and Mohawk valleys, excepting half an inch at Little Falls, N. Y. Snow is falling generally this morning. There is only running ice in the rivers.

Dubuque, Iowa, December 23.—The Mississippi River here is open in places. Where it is frozen the ice is about 2 inches thick.

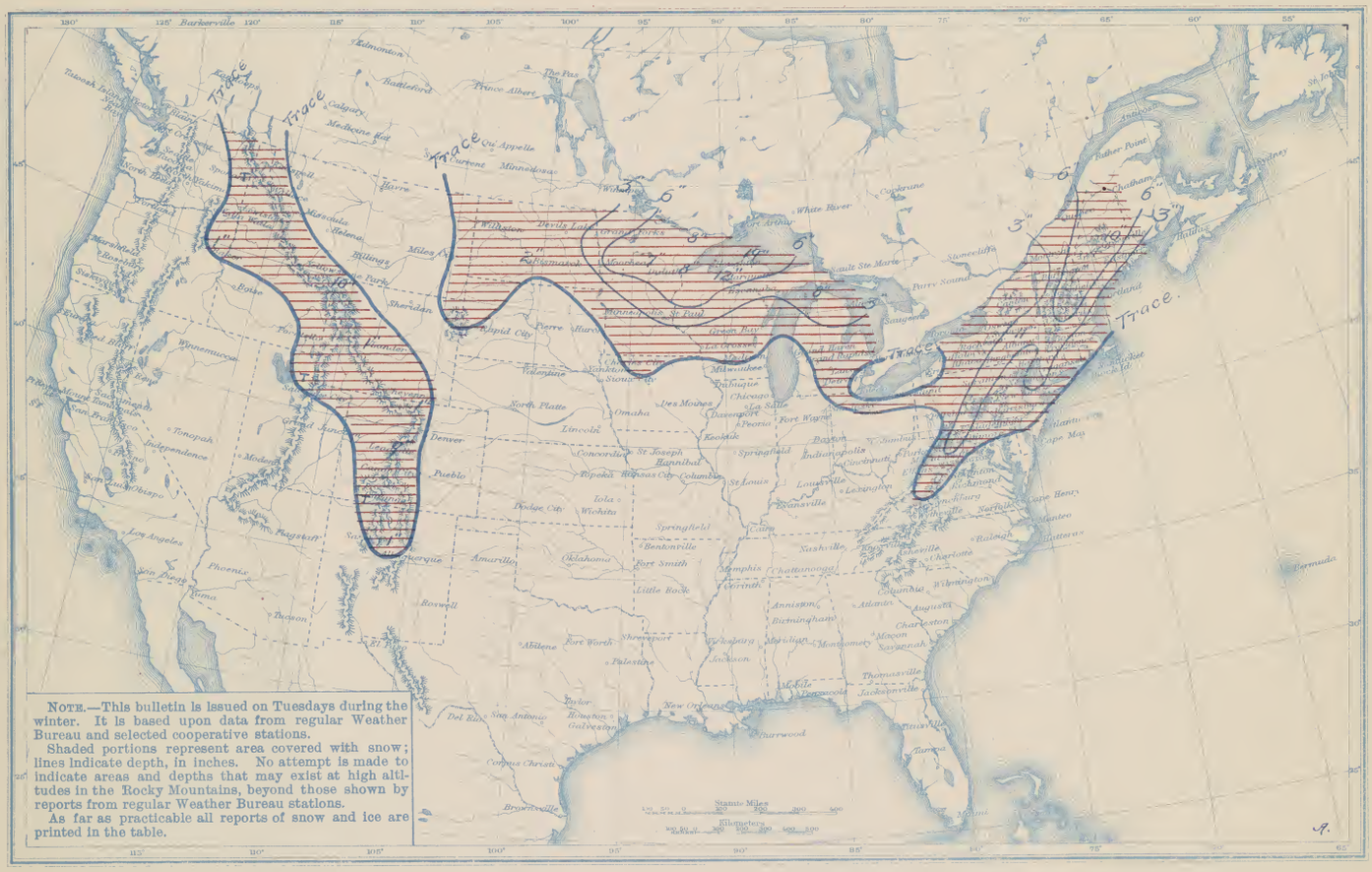
P. C. DAY, *Climatologist and Chief of Division.*

W377 P

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

SNOW AND ICE BULLETIN.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.
Willis L. Moore, Chief U. S. Weather Bureau.



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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 2, 1913.*

DEPTH OF SNOW.

The storm that moved from the Gulf States to the middle Atlantic coast, referred to in last week's issue, passed rapidly toward the New England coast during Tuesday, December 24, with a considerable increase in severity and was accompanied by heavy snows from Chesapeake Bay to southern New England. Over the remainder of the country fair weather prevailed until Friday, when another storm developed over the Middle Atlantic States and rain occurred in the Gulf and Atlantic coast States and snow and rain in the Ohio Valley and Lake region. The rains along the Atlantic coast carried off much of the snow that fell during the early part of the week.

During Sunday night and Monday a third general storm area overspread the eastern portion of the country, but the precipitation was mostly rain, snow falling only at a few points in the more northern districts. Such snowfall as occurred in other portions of the country during the week was light and confined generally to small areas in the mountain and Plateau regions of the West.

Compared with the preceding week the snow-covered area is now much less and the depths reported show diminished amounts in all districts save in portions of the Appalachian Mountain region, in New England, and at a few points in the Rocky Mountain region. In New England there has been an increase of from 2 to 6 inches, while in the upper Lake region the decrease has been nearly as great, and the considerable body of snow that covered the Ohio and middle Mississippi valleys, western Texas and eastern New Mexico, the south Appalachian Mountain regions, and the middle Atlantic coast States at the beginning of the week has generally disappeared.

In the mountain regions of the West the amount of snow at the lower elevations is much less than at the same period last winter and the accumulated amounts stored in the high ranges are probably less than for a number of years.

THICKNESS OF ICE.

The continuation of moderate temperatures in all portions of the country during the past week still further delayed the formation of any considerable amount of ice on the streams and lakes, save along the extreme northern border.

In the upper reaches of the Missouri there was a slight increase in the ice thickness, but only shore or floating ice continues from Bismarck southward, as reported last week. Slight increases were reported in the amount of ice in the smaller streams from the Dakotas eastward over the upper Mississippi Valley to the Great Lakes, but the Mississippi itself still appears to be open throughout its course from St. Paul southward, except in the vicinity of La Crosse.

The Ohio and its tributaries are mostly free of ice and the main streams of the Atlantic coast States are likewise free as far north as the Hudson, inclusive.

On the rivers and lakes of New England there has been an increase of from 2 to 4 inches over the amounts reported last week, and at points in the interior of Maine the ice is now from 8 to 15 inches thick.

In the Lake region there has been a slight increase during the past week in the amount of ice along the shores of Lake Superior and at points on Lakes Erie and Ontario, but elsewhere either no ice has yet formed or there was generally no increase over the amounts previously reported; in fact, at a number of points there is now less ice than was reported one week ago.

The following special reports have been received:

Hartford, Conn., December 31.—In the Housatonic and Connecticut watersheds the depth of snow ranges from 1 inch at Holyoke, Mass., to 5 inches at West Stewartstown, N. H., although there was 8 inches locally at Bellows Falls, Vt. In the State of Connecticut the ground is bare except at elevated stations.

Albany, N. Y., December 31.—In the Hudson Valley the snow ranges in depth from a trace at Athens up to 5 inches at Mechanicsville, but decreasing gradually beyond to only 2 inches at Thurman. In the Mohawk Valley the snow averages 3 inches deep. The Mohawk River is mostly open, while the Hudson is open throughout.

Binghamton, N. Y., December 31.—The average depth of snow in the upper Susquehanna watershed is 3 inches. The greatest amount reported is 6 inches at Homer, N. Y., and the least a trace at Binghamton.

Sandusky, Ohio, December 30.—The bay is half open.

La Crosse, Wis., December 30.—The ice in the Mississippi River here is mostly drift and uneven; but in the west channel good clear ice 10 inches thick is being harvested.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 30, 1912.

Stations.	Snow.	Ice in rivers, harbors, etc.
Colorado.	*Inches*	*Inches*
Durango	T.	.....
Leadville	9	.....
Connecticut.		
Hartford	T.	0.0
West Cornwall	5	.....
West Simsbury	1	.....
Delaware.		
Delaware City	T.	.....
Illinois.		
Peoria	0	†
Indiana.		
Terre Haute	0	†
Iowa.		
Davenport	0	*
Des Moines	0	5.0
Dubuque	0	*†
Estherville	T.	.....
Forest City	T.	.....
Humboldt	T.	.....
Keokuk	0	*
Sioux City	0	†
Maine.		
Bangor	6	5.0
Buckfield	8	.....
Cornish	8	.....
Eastport	T.	0.0
Gardiner	4	6.0
Greenville	4	14.5
Lewiston	7	8.0
Millinocket	10	.....
Portland	T.	0.0
Maryland.		
Darlington	2	.....
Frederick	2	.....
Oakland	2	.....
Massachusetts.		
Adams	5	.....
Amherst	1	.....
Concord	3	.....
Fitchburg	2	.....
Mansfield	2	.....
Michigan.		
Alpena	1	2.0
Ann Arbor	1	.....
Battle Creek	T.	.....
Big Rapids	T.	.....
Cadillac	2	.....
Calumet	19	.....
Chatham	4	.....
Escanaba	2	†
Harrisville	4	.....
Houghton	15	8.0
Iron Mountain	4	.....
Iron River	5	.....
Ironwood	12	.....
Lansing	T.	.....
Ludington	T.	†
Mackinaw	8	.....
Mancelona	4	.....
Manistee	T.	.....
Marquette	7	0.0
Newberry	2	.....
Port Huron	T.	0.0
Michigan—Cont'd		
Rock	6	.....
Saginaw	T.	0.5
Sault Ste. Marie	2	*
Minnesota.		
Angus	2	.....
Collegeville	3	.....
Duluth	8	13.0
Ely	8	.....
Fergus Falls	3	.....
Fort Ripley	4	.....
Grand Meadow	2	.....
Hinckley	6	.....
Mankato	2	.....
Milan	T.	.....
Minneapolis	3	.....
Moorhead	6	14.0
New Richland	2	.....
Reeds	2	.....
St. Paul	3	†
State Sanatorium	7	.....
Virginia	7	.....
Missouri.		
Hannibal	0	†
St. Joseph	0	*
Nebraska.		
Omaha	0	†
New Hampshire.		
Bethlehem	7	.....
Concord	3	1.0
Durham	2	.....
Hanover	6	.....
Keene	3	.....
West Stewartstown	5	.....
New Jersey.		
Bridgeton	T.	.....
Long Branch	T.	.....
Newton	3	.....
Phillipsburg	2	.....
Tuckerton	T.	.....
New Mexico.		
Santa Fe	1	.....
New York.		
Addison	T.	.....
Albany	T.	†
Athens	T.	.....
Binghamton	T.	.....
Canton	T.	.....
Cooperstown	5	.....
Cutchogue	1	1.0
Herkimer	1	.....
Homer	6	.....
Ithaca	T.	.....
King Ferry	2	.....
Mechanicsville	5	.....
Oswego	1	1.0
Rochester	T.	1.0
Rome	1	.....
Syracuse	1	.....
Thurman	2	.....
Warwick	6	.....
North Dakota.		
Bismarck	2	†
Devils Lake	1	.....
Grand Forks	3	.....
Williston	T.	7.0
Ohio.		
Garrettsville	T.	.....
Sandusky	0	3.0
Tiffin	T.	.....
Wauseon	T.	.....
Wooster	T.	.....
Oregon.		
Baker	1	.....
Pennsylvania.		
Bethlehem	2	.....
Clarion	T.	.....
Coatesville	2	.....
Drifton	3	.....
Dubois	T.	.....
Emporium	T.	.....
Erie	0	0.5
Everett	T.	.....
Hanover	T.	.....
Harrisburg	T.	0.0
Lawrenceville	2	.....
Philadelphia	T.	0.0
Reading	T.	0.0
Selinsgrove	2	.....
Stroudsburg	3	.....
Warren	T.	.....
Williamsport	T.	.....
Rhode Island.		
Narragansett Pier	T.	.....
Providence	T.	0.0
South Dakota.		
Huron	0	10.5
Pierre	0	†
Rapid City	T.	.....
Yankton	0	†
Utah.		
Salt Lake City	T.	.....
Vermont.		
Bellows Falls	8	.....
Brattleboro	3	7.0
Burlington	T.	0.0
Northfield	1	.....
Washington.		
Spokane	T.	.....
West Virginia.		
Bayard	5	.....
Burlington	3	.....
Elkins	T.	*
Glenville	T.	.....
Hinton	1	.....
Wisconsin.		
Eau Claire	6	.....
Green Bay	T.	4.5
Hancock	2	.....
Koepenick	4	.....
La Crosse	0	6.0
Lakemills	T.	.....
Medford	3	.....
Mount Horeb	1	.....
New London	1	.....
Spooner	5	.....
Viroqua	1	.....
Wyoming.		
Cheyenne	1	.....
Lander	1	.....
Yellowstone Park	10	.....

*Floating ice. †Shore ice. T. indicates trace.

W3775

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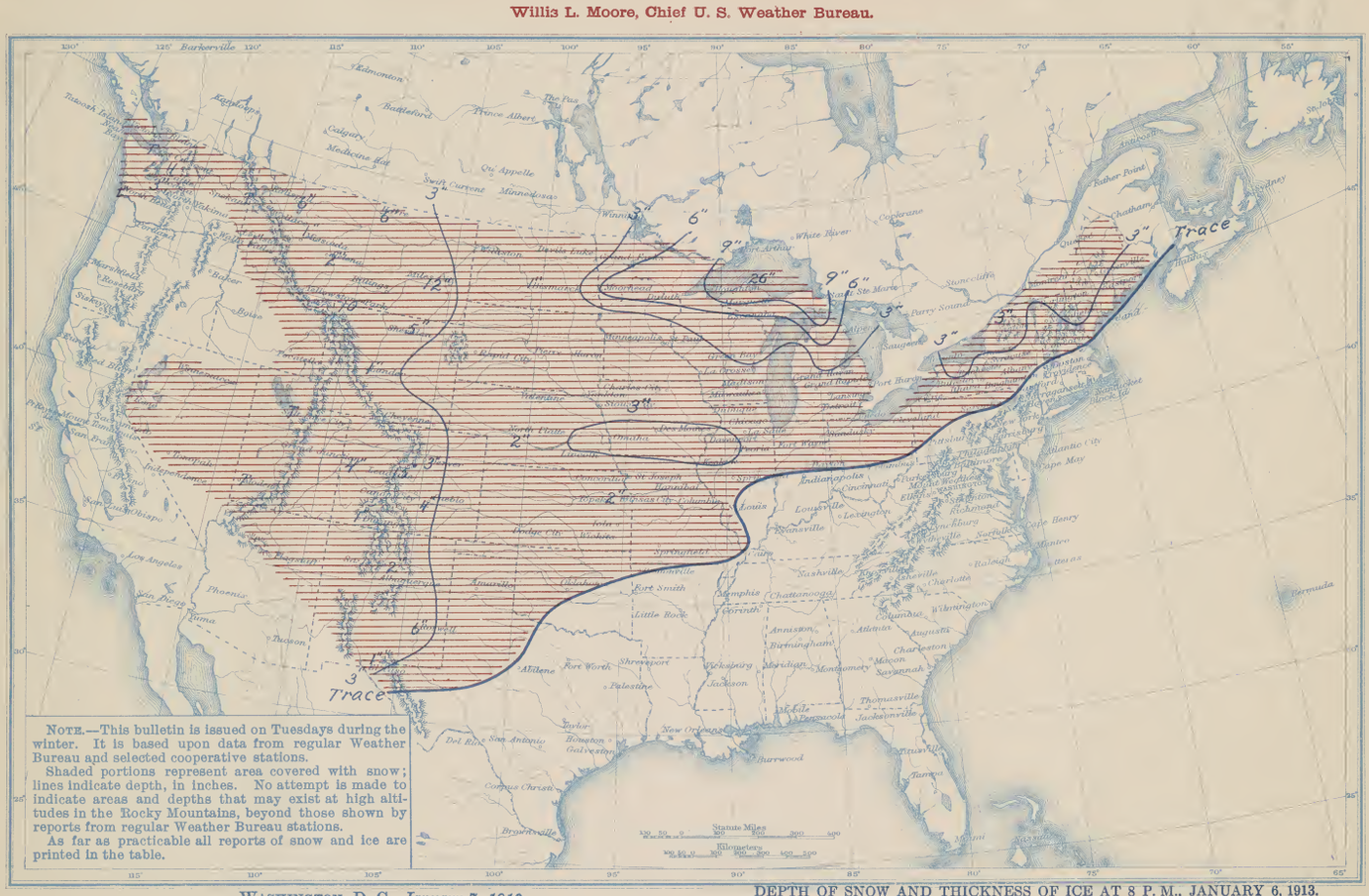

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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 7, 1913.*

DEPTH OF SNOW.

The early portion of the week just ended was free from precipitation in practically all portions of the country, but during the latter part considerable precipitation, mostly rain, occurred in the more eastern districts.

During Thursday night a storm of considerable severity developed over the Middle Atlantic States and moved rapidly northeastward on Friday and Saturday to New England and the Canadian Maritime Provinces. It was accompanied by general rains and severe winds along the coast from Cape Hatteras northward and some snow along its western edge.

Near the end of the week general rains set in over the Southwest, turning to snow during Monday in portions of the Plains region and lower Missouri Valley, and at this writing snow continues in the last-named regions and has extended into the upper Mississippi Valley and portions of the Lake region and New England; while rain is general in the Ohio and lower Mississippi valleys, Middle Atlantic States, New England, and the lower Lake region.

Considerable snow disappeared during the week over the Appalachian Mountain region and New England, and there is now practically no snow in the Atlantic coast States, save in extreme northern New York and the interior of New England. There has been a general but small increase in the Lake region, and a considerable area in the middle Mississippi and lower Missouri valleys and middle Plains region is now snow covered which was bare at the beginning of the week, and snow is still falling.

There has been an increase of several inches in the Rocky Mountain region and the far Northwest, and Montana and western Washington now have a snow covering at the lower levels ranging from 2 to 12 inches.

Although no general storm area crossed the western mountain districts light snows occurred locally and the depth increased several inches at the lower levels, especially in Colorado, New Mexico, and Montana, and doubtless there were heavier falls in the high ranges, but the amounts stored in the mountains are still generally much less than usual.

Compared with the same period in 1912 there is now much less snow in practically all portions of the country where snow usually accumulates.

THICKNESS OF ICE.

Temperatures throughout the northern portions of the country continued unusually high for the season of the year until toward the end of the week, when much colder weather overspread the West and Northwest. As a result there has been a general decrease in the amount of ice in portions of the Lake region and but little increase in New England. In the districts from the upper Lake region westward there has been a general increase in the amount of ice on the streams, due to the severe cold of the last few days, and ice has formed on the smaller streams as far south as central Kansas.

In the Missouri and its tributaries considerable increases have occurred in the thickness of ice and the main stream is closed at points as far south as Omaha. The Mississippi is closed in its upper reaches and shore or floating ice is reported as far south as St. Louis. No ice is reported from the Ohio or its principal tributaries and the rivers of the Atlantic coast as far north as the Hudson continue open. Slight increases in the thickness of the ice are reported from a few points in New England, but the ice conditions in that section have not changed materially since the preceding report.

The small amount of ice reported last week in the lower Lake region has mostly disappeared, but on the shores of Lake Superior and northern Lake Michigan there has been a slight increase.

As compared with the same period one year ago there is now far less ice in all districts where it usually forms.

The following special reports have been received:

Gardiner, Me., January 6.—As there is a scarcity of snow in the lumbering districts of the big woods, operations are confined to yarding. Ice on the Kennebec River is too thin and unsafe for cultivation.

Brattleboro, Vt., January 6.—There is some snow back on the hills.

Hartford, Conn., January 7.—Over the Housatonic watershed the ground is bare, likewise over the Connecticut to the northern border of Massachusetts. To the northward the depth of snow averages 3 inches, ranging from 1 inch near Brattleboro to 5 inches at Bethlehem, N. H.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 6, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arkansas.	*Inches*	*Inches*
Bentonville	T.	.....
Colorado.		
Denver	3	.....
Durango	1	.....
Grand Junction	4	.....
Leadville	15	.....
Pueblo	4	.....
Idaho.		
Lewiston	1	0.0
Illinois.		
Antioch	1	.....
Cairo	T.	0.0
Chicago	T.	.....
Danville	T.	.....
La Salle	1	†
Martinton	2	.....
Monmouth	6	.....
Peoria	3	2.5
Springfield	T.	.....
Winnebago	2	.....
Indiana.		
Fort Wayne	T.	.....
Knox	T.	.....
La Fayette	T.	.....
Richmond	T.	.....
Terre Haute	0	†
Iowa.		
Albia	3	.....
Atlantic	4	.....
Charles City	4	.....
Creston	2	.....
Davenport	2	*
Des Moines	4	7.0
Dubuque	2	†
Humboldt	T.	.....
Iowa City	3	.....
Keokuk	2	*
Sioux City	1	†
Kansas.		
Concordia	2	.....
Iola	T.	0.5
Topeka	2	.....
Wichita	T.	.....
Maine.		
Bangor	1	7.0
Cornish	3	.....
Gardiner	T.	4.0
Greenville	3	16.0
Lewiston	T.	9.0
Michigan.		
Alpena	2	*†
Ann Arbor	T.	.....
Battle Creek	T.	.....
Big Rapids	T.	.....
Cadillac	5	.....
Calumet	26	.....
Chatham	11	.....
Detroit	T.	*
Escanaba	4	†
Grand Haven	1	.....
Grand Rapids	T.	.....
Harrisville	4	.....
Houghton	17	10.5
Iron Mountain	4	.....
Iron River	7	.....
Ironwood	11	.....
Michigan—Cont'd		
Lansing	T.	.....
Ludington	1	†
Mackinaw	10	.....
Manistee	2	.....
Marquette	10	†
Newberry	5	.....
Port Huron	2	0.0
Saginaw	T.	0.5
St. Ignace	13	.....
Sault Ste. Marie	9	1.5
South Haven	1	.....
Minnesota.		
Collegeville	2	.....
Duluth	8	14.0
Ely	7	.....
Glencoe	1	.....
Mankato	2	.....
Minneapolis	2	.....
Moorhead	6	18.0
New Richland	1	.....
Reeds	1	.....
St. Paul	2	6.0
State Sanatorium	7	.....
Virginia	7	.....
Missouri.		
Columbia	T.	.....
Hannibal	1	*†
Kansas City	1	*
St. Joseph	2	*
St. Louis	T.	*
Springfield	T.	.....
Montana.		
Havre	6	.....
Helena	2	.....
Kalispell	6	.....
Miles City	12	.....
Missoula	1	.....
Nebraska.		
Alliance	1	.....
Auburn	2	.....
Lincoln	2	.....
North Platte	2	.....
Omaha	3	6.5
York	4	.....
Nevada.		
Reno	T.	0.0
New Hampshire.		
Bethlehem	5	.....
Concord	T.	1.0
Hanover	1	.....
Keene	2	.....
New Mexico.		
Roswell	6	.....
Santa Fe	2	.....
New York.		
Canton	2	.....
Cooperstown	T.	.....
Corinth	T.	.....
Lowville	3	.....
Malone	2	.....
Ogdensburg	3	.....
Oxford	1	.....
Rochester	3	0.0
Saranac Lake	3	.....
Tribeshill	2	.....
New York—Cont'd		
Utica	2	.....
Watertown	3	.....
North Dakota.		
Bismarck	1	9.0
Devils Lake	T.	.....
Grand Forks	2	.....
Williston	T.	10.5
Ohio.		
Bangorville	T.	.....
Cadiz	T.	.....
Canton	T.	.....
Garrettsville	2	.....
Sandusky	1	‡
Tiffin	T.	.....
Toledo	1	*
Wauseon	2	.....
Waverly	T.	.....
Youngstown	1	.....
Oklahoma.		
Oklahoma	T.	.....
Pennsylvania.		
Drifton	1	.....
Emporium	1	.....
Lawrenceville	T.	.....
Somerset	2	.....
Warren	5	.....
South Dakota.		
Huron	0	12.5
Pierre	0	†
Yankton	T.	*†
Texas.		
Abilene	T.	.....
Amarillo	T.	.....
El Paso	1	.....
Utah.		
Modena	T.	.....
Salt Lake City	T.	.....
Vermont.		
Brattleboro	0	7.0
Northfield	T.	.....
St. Johnsbury	4	.....
Washington.		
North Head	1	.....
Port Crescent	T.	0.0
Seattle	4	0.0
Spokane	T.	.....
Tacoma	3	0.0
West Virginia.		
Bayard	8	.....
Rowlesburg	1	.....
Wisconsin.		
Green Bay	3	5.0
Koepenick	5	.....
La Crosse	2	7.0
Lakemills	2	.....
Medford	3	.....
Milwaukee	2	0.0
New London	4	.....
Racine	1	.....
Spooner	5	.....
Viroqua	2	.....
Wyoming.		
Cheyenne	4	.....
Lander	1	.....
Sheridan	5	.....
Yellowstone Park	10	.....

* Floating ice. † Shore ice. ‡ Measurement impracticable. T. indicates trace.

Albany, N. Y., January 7.—There is no snow in the Hudson Valley, excepting half an inch at Corinth. In the Mohawk Valley the only snow reported is 2 inches at Utica and Tribes Hill. The Mohawk River is mostly open, while the Hudson is entirely open.

Sandusky, Ohio, January 6.—The bay is partly open and the ice over the remainder is estimated to be 2 inches thick.

Yankton, S. Dak., January 6.—The Missouri River is frozen over about 3 miles north of here.

P. C. DAY, *Climatologist and Chief of Division.*

U. S. DEPARTMENT OF AGRICULTURE,
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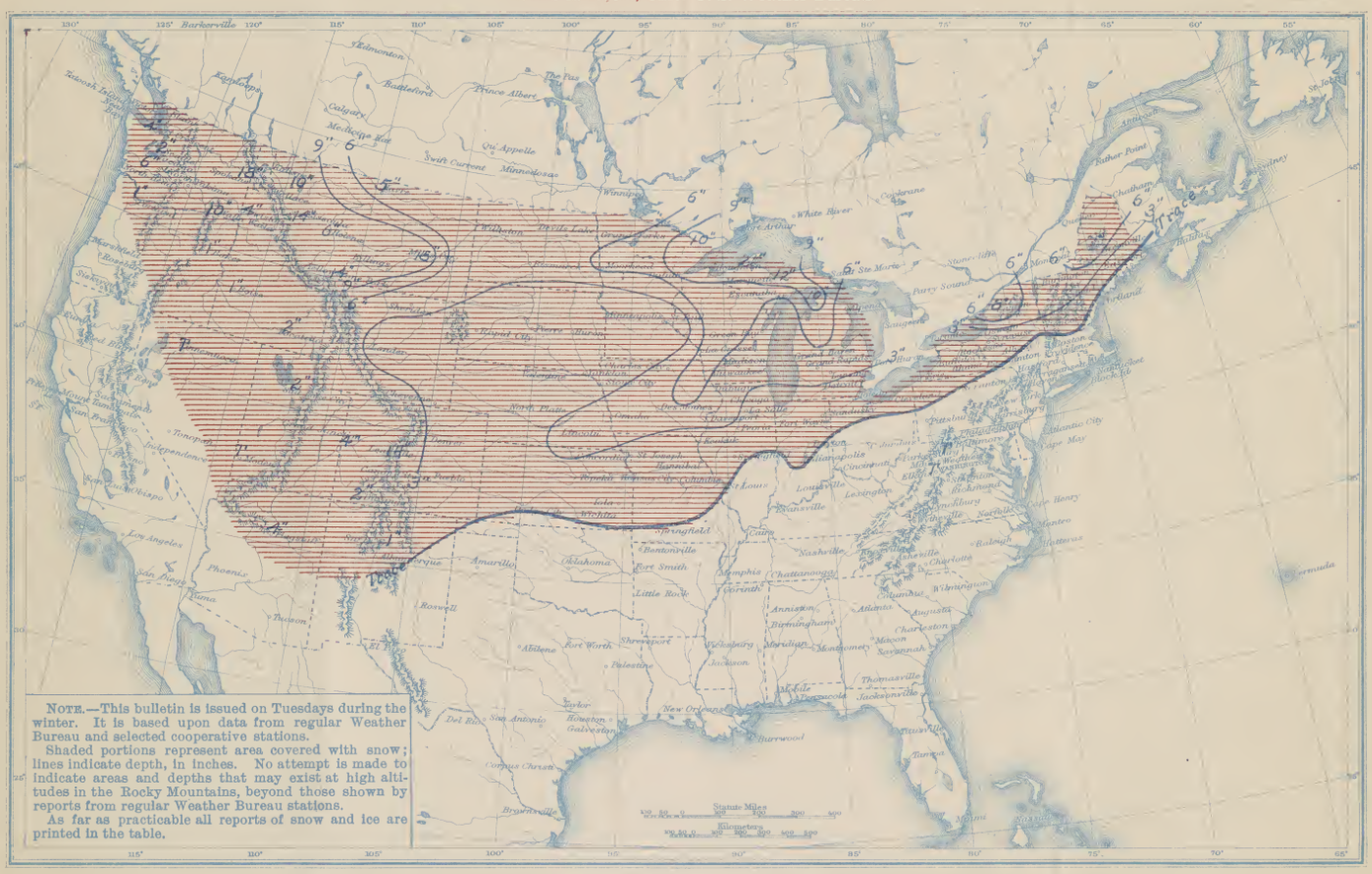

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WASHINGTON, D. C., *January 14, 1913.*

DEPTH OF SNOW.

The general area of precipitation central in the Mississippi and Ohio valleys at the close of the preceding week moved rapidly during Tuesday and Wednesday to New England. Snows continued in the upper Mississippi Valley and Lake region and heavy rains fell in the Ohio and Tennessee valleys. A second storm developed during Friday night and Saturday in the central valleys, causing snow in portions of the western mountain districts and along the western side of the storm area as it advanced eastward and northeastward to the Atlantic coast and New England during Saturday and Sunday. Heavy rains were again general in the Ohio Valley, further augmenting the severe floods then in progress in that river and its tributaries.

In the districts to the westward of the mountains local snows were of frequent occurrence in the central and northern portions, but the falls were generally light, except in portions of the far Northwest where they were unusually heavy, especially over portions of eastern Washington, northern Idaho, and western Montana, and where they still continue, press reports stating that the depth is the greatest in many years, seriously interfering with railroad and other lines of communication.

There has been a general increase during the week in the amount of snow on the ground in all northern districts, and save for small areas in South Dakota and Nebraska there is a moderate covering in much of the Great Plains, the Missouri and upper Mississippi valleys, and Lake region, affording protection from the severe cold of the past ten days and furnishing moisture at points in the more western districts, where it was much needed. Over the eastern districts there is still but little snow, save in the northern portions of New York and New England.

Several inches of snow disappeared during the week in the southern Rocky Mountain region, but in the far Northwest there was a marked increase, and heavy snow now covers the lower levels, while the depths in the mountains of that region have doubtless greatly increased. In the remaining portions of the mountain regions of the West there still appears to be a serious shortage as compared with the depths usual at this season of the year.

THICKNESS OF ICE.

The continuation during much of the week of cold weather over the northern and western districts, which had set in during the latter part of the preceding week, caused an increase in the amount of ice on all the streams and lakes of that region. In the eastern districts, however, but little ice formed, due to heavy rains and generally high water in the streams.

The upper Missouri and its tributaries are closed, but the main stream is still open in portions of its lower course; likewise the upper Mississippi and its tributaries are generally closed, and floating ice is reported as far south as the mouth of the Ohio. The Ohio and all eastern streams and lakes are open, except those of the interior of New England, where small increases occurred during the week.

Considerable ice formed in the Lake region and several inches now cover some of the harbors of the lower Lakes, while in the upper Lakes an increase in thickness of from 2 to 7 inches has been rather general. Compared with the same period last year there continues far less ice in all districts than was reported at that time.

The following special reports have been received:

Brattleboro, Vt., January 13.—The Connecticut River is open in places. In the country the sleighing is good and logging is going on freely.

Albany, N. Y., January 14.—With the exception of 2 inches at Utica, there is no snow in either the Mohawk or the Hudson Valley. The Mohawk River is open, while the Hudson has only floating ice.

Dubuque, Iowa, January 13.—In the harbor and between the wing dams the ice is 11 inches thick.

Yankton, S. Dak., January 13.—While there is only shore and floating ice at this point, at a distance of 1 mile north the ice measures 12 inches in thickness and 1 mile south 3 inches.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 13, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	4	.....
Colorado.		
Denver	1	.....
Durango	2	.....
Grand Junction	4	.....
Leadville	14	.....
Pueblo	T.	.....
Idaho.		
Boise	1	.....
Lewiston	4	†
Pocatello	2	.....
Illinois.		
Bloomington	1	.....
Cairo	0	*
Chicago	1	.....
Dwight	1	.....
La Salle	2	6.0
Monmouth	4	.....
Peoria	3	3.0
Springfield	T.	.....
Winnebago	5	.....
Indiana.		
Bloomington	T.	.....
Fort Wayne	1	.....
Knox	1	.....
La Fayette	T.	.....
Marion	T.	.....
Terre Haute	0	*
Iowa.		
Atlantic	5	.....
Boone	4	.....
Davenport	4	†
Des Moines	5	11.0
Dubuque	3	6.0
Iowa City	6	.....
Keokuk	2	11.0
Sioux City	1	†
Kansas.		
Concordia	4	.....
Dodge City	T.	.....
Ellinwood	1	.....
Iola	T.	5.5
McPherson	2	.....
Topeka	2	.....
Maine.		
Bangor	3	9.0
Buckfield	5	.....
Cornish	3	.....
Gardiner	T.	6.0
Greenville	7	17.0
Lewiston	T.	12.0
Millinocket	8	.....
Orono	4	.....
Van Buren	5	.....
Massachusetts.		
Concord	T.	.....
Michigan.		
Alpena	5	2.0
Ann Arbor	2	.....
Battle Creek	5	.....
Big Rapids	3	.....
Cadillac	6	.....
Calumet	23	.....
Chatham	12	.....
Detroit	1	*
Escanaba	3	7.0
Grand Haven	2	.....
Grand Rapids	3	.....
Harrisville	4	.....
Houghton	21	12.5
Iron Mountain	4	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Cont'd	*Inches*	*Inches*
Iron River	7	.....
Ironwood	11	.....
Lansing	4	.....
Ludington	3	†
Mackinaw	10	.....
Manistee	1	.....
Marquette	9	3.5
Newberry	4	.....
Port Huron	4	5.0
Rock	9	.....
Saginaw	4	9.0
St. Ignace	17	.....
Sault Ste. Marie	8	4.0
Minnesota.		
Angus	3	.....
Collegeville	2	.....
Duluth	9	17.0
Ely	10	.....
Fergus Falls	4	.....
Fort Ripley	3	.....
Glencoe	2	.....
Grand Meadow	2	.....
International Falls	5	.....
Mankato	2	.....
Milan	1	.....
Minneapolis	2	.....
Moorhead	7	22.0
New Richland	2	.....
Reeds	2	.....
St. Paul	1	10.0
State Sanatorium	8	.....
Missouri.		
Brunswick	3	.....
Clinton	T.	.....
Columbia	T.	.....
Hannibal	1	4.0
Ironton	1	.....
Kansas City	1	†
Maryville	3	.....
St. Joseph	2	‡
St. Louis	T.	*
Springfield	T.	.....
Unionville	1	.....
Montana.		
Havre	5	.....
Helena	6	.....
Kalispell	10	.....
Miles City	15	.....
Missoula	14	.....
Nebraska.		
Alliance	1	.....
Auburn	5	.....
Genoa	2	.....
Guide Rock	3	.....
Lincoln	3	.....
North Platte	1	.....
Omaha	4	13.5
York	5	.....
Nevada.		
Winnemucca	T.	.....
New Hampshire.		
Bethlehem	3	.....
Concord	T.	4.0
Keene	T.	.....
New Mexico.		
Santa Fe	1	.....
New York.		
Addison	T.	.....
Binghamton	T.	.....
Buffalo	2	†
Canton	8	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
New York—Cont'd	*Inches*	*Inches*
Herkimer	1	.....
Ithaca	1	.....
King Ferry	1	.....
Lake Placid	13	.....
Lowville	4	.....
Ogdensburg	6	.....
Oswego	1	1.0
Oxford	T.	.....
Rochester	2	0.0
Saranac Lake	6	.....
Watertown	9	.....
North Dakota.		
Bismarck	3	13.0
Devils Lake	1	.....
Williston	2	13.5
Ohio.		
Bangorville	T.	.....
Garrettsville	1	.....
Sandusky	T.	7.5
Tiffin	T.	.....
Toledo	0	1.0
Wauseon	2	.....
Oregon.		
Baker	1	.....
Portland	1	0.0
Pennsylvania.		
Erie	T.	0.0
Greenville	1	.....
Lawrenceville	T.	.....
Meadville	1	.....
Mercer	1	.....
Warren	1	.....
South Dakota.		
Huron	T.	16.5
Pierre	0	†
Rapid City	2	.....
Yankton	T.	*†
Utah.		
Modena	T.	.....
Salt Lake City	2	.....
Vermont.		
Brattleboro	0	6.0
Burlington	4	0.0
Northfield	2	.....
Washington.		
Port Crescent	4	0.0
Seattle	2	0.0
Spokane	18	.....
Tacoma	6	0.0
Walla Walla	10	.....
West Virginia.		
Bayard	T.	.....
Elkins	T.	0.0
Wisconsin.		
Green Bay	4	8.0
Hancock	4	.....
Koepenick	5	.....
La Crosse	3	15.5
Lakemills	4	.....
Madison	4	.....
Milwaukee	4	.....
Mount Horeb	5	.....
New London	6	.....
Racine	4	.....
Sheboygan	5	.....
Viroqua	8	.....
Wyoming.		
Cheyenne	1	.....
Lander	T.	.....
Sheridan	5	.....
Yellowstone Park	14	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. T. indicates trace.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

SNOW AND ICE BULLETIN.

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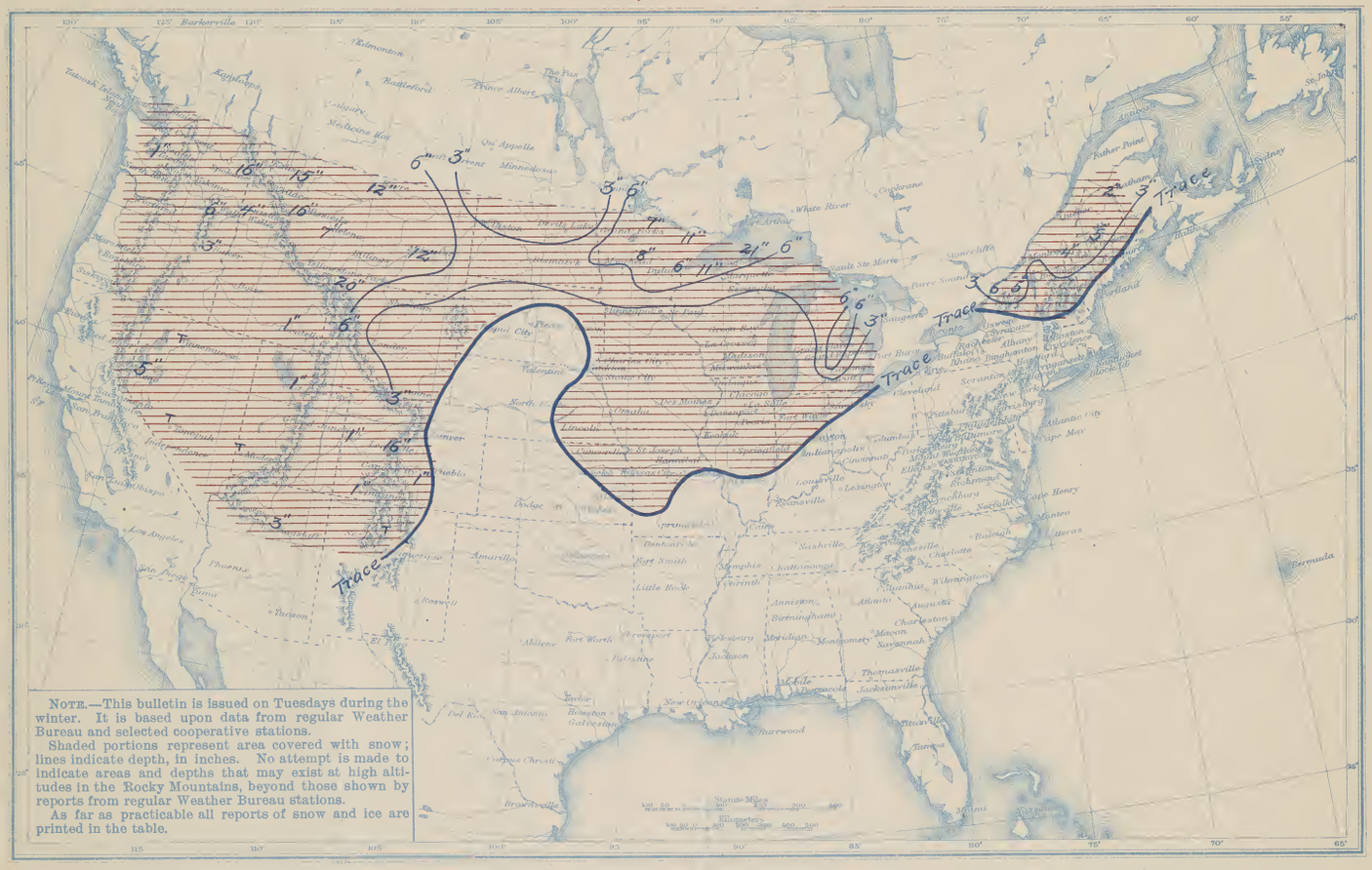
Willis L. Moore, Chief U. S. Weather Bureau.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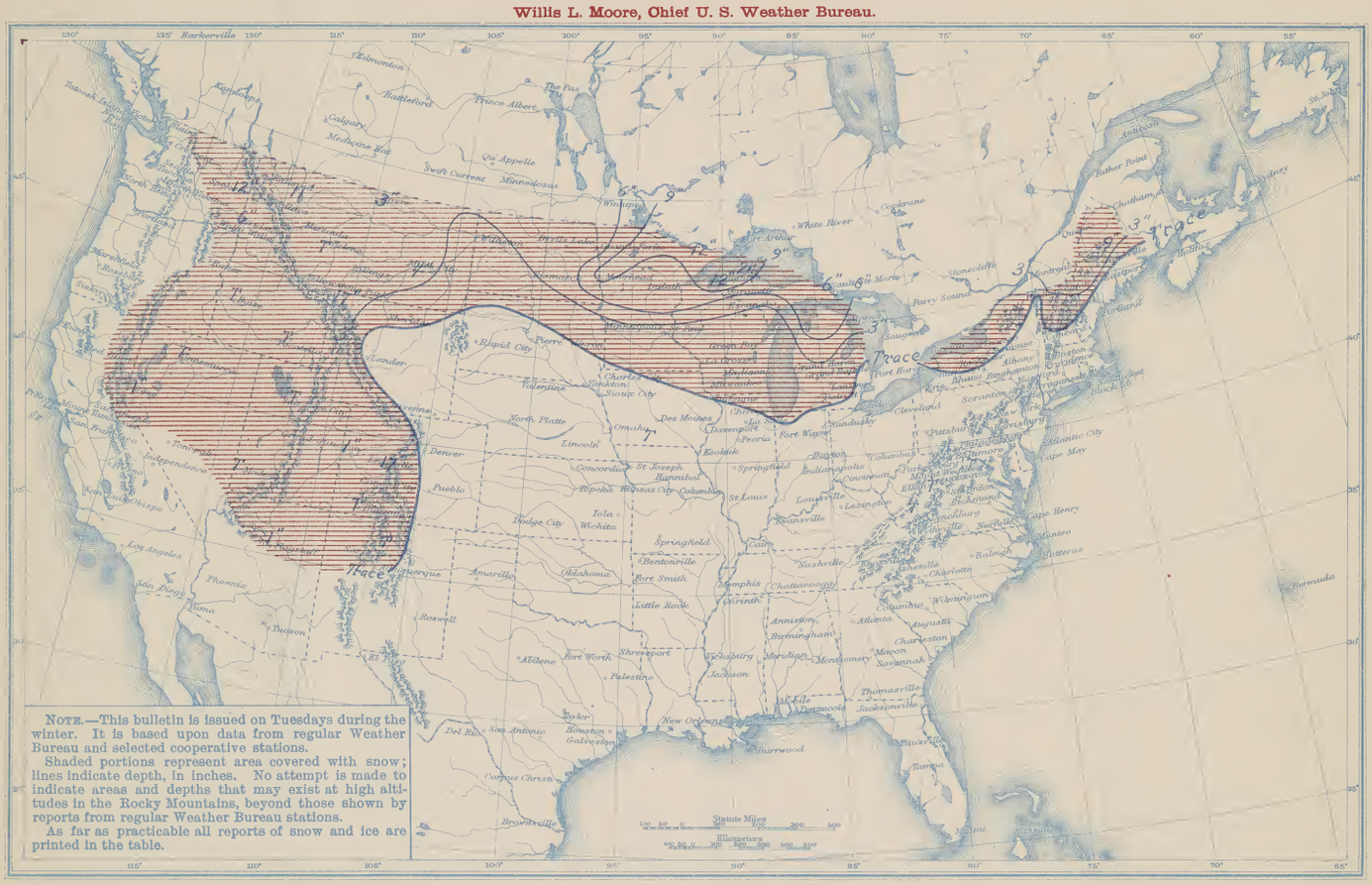

NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 28, 1913.*

DEPTH OF SNOW.

Considerable precipitation, mostly in the form of rain, occurred during the week just ended from the Mississippi Valley eastward, especially over the Ohio Valley and portions of the lower Lake region and the Atlantic and Gulf coast States. In the far Northwest there was likewise some heavy precipitation, mostly rain, but over the remaining districts there was a general absence of precipitation either in the form of rain or snow.

At the close of the week the limited snow covering to the eastward of the Rocky Mountains, reported at the end of the preceding week, was still further reduced, save in the upper Lake region and thence westward to North Dakota where there was a fairly general increase of from 1 to 4 inches.

In the northern Rocky Mountain region and portions of the far Northwest the considerable body of snow covering the ground at the close of the preceding week was very materially reduced at the lower levels, but the cooler weather at the higher elevations probably prevented any material loss in the amounts stored in the mountains. Over the remainder of the mountain and plateau regions of the West there appears to have been little or no snowfall during the week, and the amount lying at the lower elevations is now slightly less than a week ago.

Throughout the greater part of the great winter wheat growing area the ground was bare during most of the week, but no severe temperature changes occurred, and it is probable no serious damage has resulted from the general absence of a snow covering so far this winter.

In the central and southern portions of the mountain regions of the West the winter's supply of snowfall continues apparently far below the normal, and the outlook for a normal supply of water for irrigation is still unsatisfactory.

THICKNESS OF ICE.

The further continuation of moderate temperatures during the week just ended prevented the formation of any additional ice on the streams and lakes of the country, save over extreme northern districts; while farther south, especially in the middle Missouri and Mississippi valleys, the small amounts that had formed during the preceding week disappeared to some extent.

In the Missouri River and its tributaries but little ice is reported south of the Dakotas, and likewise in the Mississippi only shore or floating ice is reported southward of Dubuque, Iowa.

The Ohio and its tributaries as well as all streams along the Atlantic coast still remain open throughout, save for the streams of northern New England where conditions continue about as reported last week.

In the Great Lakes region some additional ice formed on Lake Superior and over northern Lake Michigan, but in the remaining lakes the harbors are nearly everywhere entirely free of ice.

At the same period last year the rivers and lakes throughout all northern districts were heavily covered with ice and the harbors of the Great Lakes were generally entirely closed and the Lakes themselves covered with the heaviest ice reported in many years.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 27, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Michigan*—Cont'd	*Inches*	*Inches*	*New York*—Cont'd	*Inches*	*Inches*
Flagstaff	1	.....	Newberry	3	.....	Lake Placid	4	.....
Colorado.			Port Huron	0	*	Rochester	1	0.0
Durango	T.	.....	Rock	8	.....	Saranac Lake	2	.....
Grand Junction	1	.....	Saginaw	1	3.5	Syracuse	1	.....
Leadville	17	.....	Sault Ste. Marie	6	9.0	*North Dakota.*		
Idaho.			*Minnesota.*			Bismarck	2	24.5
Boise	T.	.....	Angus	4	.....	Devils Lake	4	.....
Lewiston	6	0.0	Collegeville	6	.....	Williston	T.	32.5
Pocatello	T.	.....	Duluth	6	20.0	*South Dakota.*		
Illinois.			Ely	12	.....	Huron	T.	17.5
Chicago	T.	.....	Fergus Falls	4	.....	Pierre	0	†
Peoria	0	†	Fort Ripley	4	.....	Yankton	0	†
Indiana.			Glencoe	T.	.....	*Utah.*		
Knox	T.	.....	Hinckley	8	.....	Modena	T.	.....
Iowa.			International Falls	9	.....	Salt Lake City	T.	.....
Charles City	T.	.....	Mankato	T.	.....	*Vermont.*		
Creston	T.	.....	Minneapolis	2	.....	Bellows Falls	T.	.....
Davenport	0	†	Moorhead	9	17.5	Lyndonville	3	.....
Des Moines	0	10.0	New Richland	T.	.....	Northfield	T.	.....
Dubuque	T.	8.0	St. Paul	1	18.0	St. Johnsbury	2	.....
Sioux City	0	†	State Sanatorium	8	.....	*Virginia.*		
Maine.			Virginia	5	.....	Mount Weather	T.	.....
Bangor	0	10.0	*Missouri.*			*Washington.*		
Buckfield	4	.....	Hannibal	0	*†	Spokane	12	.....
Gardiner	0	4.0	Kansas City	0	*	*West Virginia.*		
Greenville	5	14.0	St. Joseph	0	†	Bayard	T.	.....
Lewiston	T.	11.0	*Montana.*			Elkins	T.	0.0
Millinocket	9	.....	Havre	3	.....	Hinton	T.	.....
Michigan.			Helena	T.	.....	*Wisconsin.*		
Alpena	5	†	Kalispell	11	.....	Ashland	10	.....
Battle Creek	T.	.....	Miles City	4	.....	Green Bay	2	8.0
Big Rapids	T.	.....	*Nebraska.*			Hancock	1	.....
Cadillac	6	.....	Omaha	0	9.0	Koepenick	3	.....
Calumet	24	.....	*Nevada.*			La Crosse	1	16.5
Detroit	T.	4.0	Reno	1	0.0	Madison	3	.....
Escanaba	1	14.0	Winnemucca	T.	.....	Medford	1	.....
Grand Haven	T.	.....	*New Hampshire.*			Milwaukee	1	0.0
Grand Rapids	T.	.....	Bethlehem	T.	.....	New London	T.	.....
Harrisville	6	.....	Concord	0	1.5	Racine	T.	.....
Houghton	23	11.5	Hanover	T.	.....	Sheboygan	3	.....
Iron Mountain	3	.....	West Stewartstown	3	.....	Viroqua	2	.....
Ironwood	12	.....	*New Mexico.*			Wausau	1	.....
Lansing	T.	.....	Santa Fe	T.	.....	*Wyoming.*		
Ludington	2	†	*New York.*			Sheridan	1	.....
Mancelona	8	.....	Buffalo	T.	0.0	Yellowstone Park	17	.....
Manistee	2	.....	Canton	T.	.....			
Marquette	5	0.0	Ithaca	T.	.....			

* Floating ice. † Shore ice. T. indicates trace.

The following special reports have been received:

Brattleboro, Vt., January 27.—The ice in the Connecticut River here has broken up.

Hartford, Conn., January 28.—The Connecticut River is still open, and navigation is in progress.

Albany, N. Y., January 28.—No snow is reported in the Hudson and Mohawk valleys. Both rivers are free from ice.

Yankton, S. Dak., January 27.—In the Missouri River here there is shore ice of irregular thickness, rotting rapidly. The greatest thickness measured is 16 inches.

P. C. DAY, *Climatologist and Chief of Division.*

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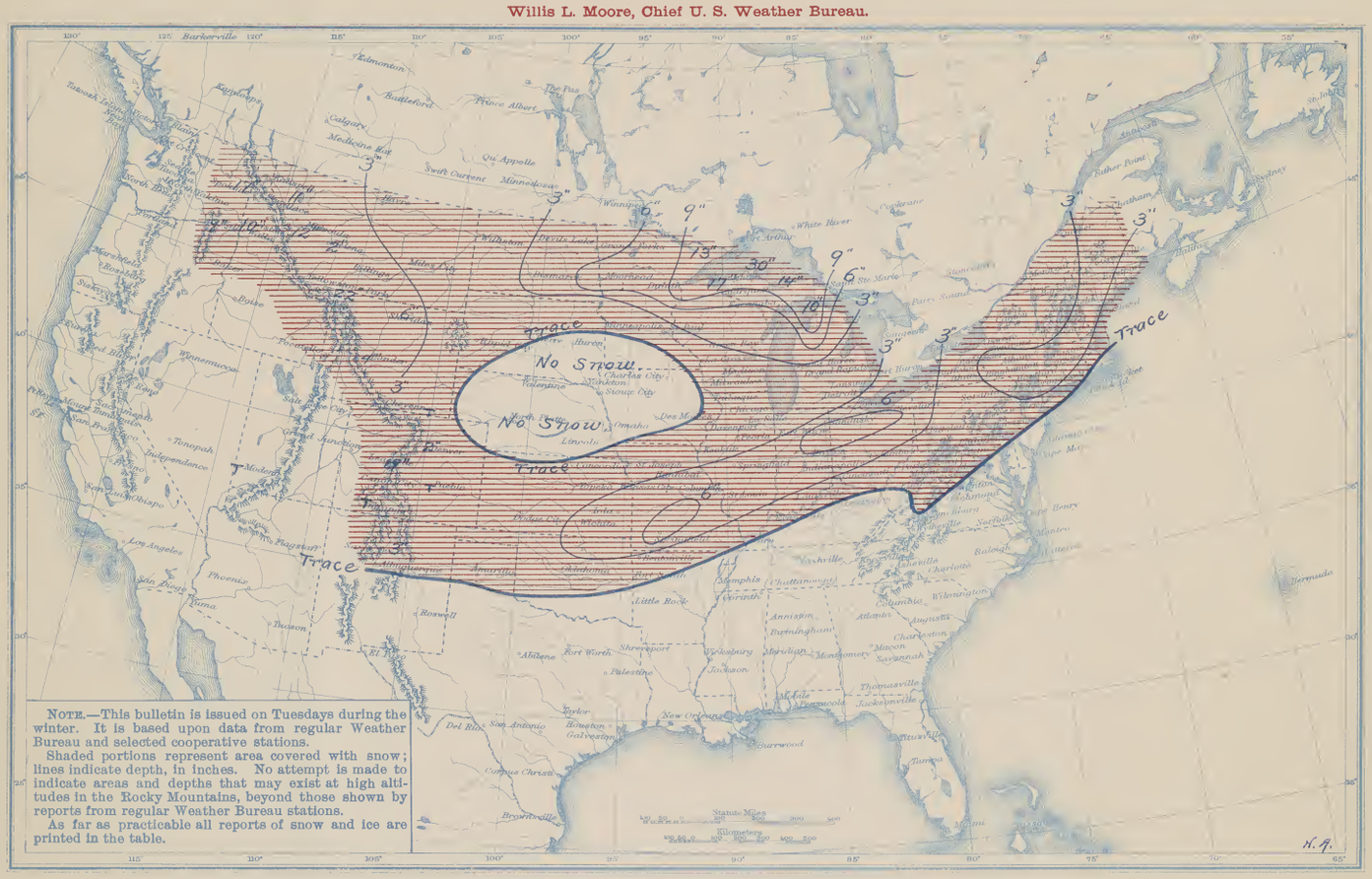
No Snow.
No Snow
Trace
Trace
Trace
Trace
3"
6"
9"
10"
15"
30"
14"
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As far as practicable all reports of snow and ice are printed in the table.
N. H.

WASHINGTON, D. C., *February 4, 1913.*

DEPTH OF SNOW.

The early part of the week was free from storms of any importance, and light snow occurred, as a rule, only in the Lake region. About Thursday, however, low pressure developed in the Missouri Valley, and by Friday morning it had moved to the Lake region, with rain and snow in that district, rain in the Ohio and lower Mississippi valleys, and light local snow in the Northwest. With the eastward movement of this storm area, light rain or snow overspread New England and rain occurred in the Middle and South Atlantic and east Gulf States.

During Saturday and Sunday light snows occurred in the middle and southern Rocky Mountain regions, and by Monday precipitation was general from the southern Plains eastward to the Atlantic coast, snow occurring in the more northern and rains over the southern districts. At the same time a storm had developed over the far Northwest and snow was rather general Monday throughout the northern Plateau and northern Rocky Mountain regions.

As a result of the several storms, the ground now has a light to moderate snow covering over nearly all central and northern districts from the Rocky Mountains eastward, and there is a rather heavy covering over the northern Plateau and northern Rocky Mountain regions, where snow is still falling. There is little or no snow on the ground in the middle Missouri Valley, but to the southward over portions of Kansas, Oklahoma, Missouri, and northern Arkansas there is a heavier covering, as well as in the Ohio Valley and portions of the lower Lake region, Appalachian Mountains and Middle Atlantic States, where the ground was bare at the beginning of the week.

In the mountain regions of the West, there was considerable snow from Colorado northward, and the fall was quite heavy on the plains of eastern Washington and in northern Idaho.

The amount of snow in the high mountains of the Western States appears to be normal or above in the northern tier of States, but in the middle and southern sections it is generally less than the average, and especially so in the high Sierra of California and Nevada.

THICKNESS OF ICE.

Moderately warm weather prevailed during the past week over the districts from the Rocky Mountains eastward until toward the end, when the coldest weather of the winter so far overspread the Northwest and moved rapidly eastward to the Middle Atlantic States and New England by Sunday morning.

At the same time another cold area had entered the Canadian Northwest and by Monday it had moved to the Missouri Valley, with indications of a continued advance eastward and southeastward to the central valleys and eastern districts.

As a result of the generally cold weather of the past few days there has been a moderate increase in the amount of ice on the rivers and lakes of the northern districts over that reported one week ago.

The Missouri River is now closed as far south as Omaha, Nebr., and the Mississippi as far south as Davenport, Iowa, with a considerable increase in the thickness over that reported last week. The Ohio continues open, but some ice is reported on its smaller tributaries; while in the Atlantic coast States the conditions remain about as reported last week, except that in New England, especially in Maine, there has been a considerable increase. On account of the continued moderately warm weather in the last-named district the harvesting of ice has not yet begun.

In the Lake region several inches of ice formed in the harbors of Lake Erie, and there was a substantial increase over the amounts reported last week in the harbors of the upper Lakes.

The following special reports have been received:

Gardiner, Me., February 3.—Owing to the very mild weather, no ice harvesting can be done, while in the lumbering districts for the same cause little has been done.

Albany, N. Y., February 4.—There is about 5 inches of snow in the Hudson and Mohawk valleys. With the exception of 2 inches of ice at Utica and some floating ice elsewhere, both rivers are free. On the Hudson navigation is still in progress.

Binghamton, N. Y., February 4.—In the upper Susquehanna and Chenango valleys the snow averages 4 inches deep, and in the Unadilla and Tioghnioga 5 inches. The greatest depth reported is 7 inches.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 3, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arkansas.	*Inches*	*Inches*
Bentonville	3	.....
Fort Smith	T.	0.0
Colorado.		
Denver	2	.....
Durango	T.	.....
Leadville	19	.....
Pueblo	T.	.....
Connecticut.		
Hartford	5	*
New Haven	2	0.0
Idaho.		
Lewiston	10	0.0
Pocatello	T.	.....
Illinois.		
Bloomington	2	.....
Cairo	2	0.0
Dwight	2	.....
Hillsboro	3	.....
La Salle	1	‡
Martinton	3	.....
Olney	4	.....
Peoria	2	2.5
Springfield	5	.....
Indiana.		
Evansville	2	0.0
Fort Wayne	6	.....
Indianapolis	3	.....
Knox	2	.....
Marion	6	.....
Paoli	2	.....
Seymour	3	.....
Terre Haute	3	1.0
Iowa.		
Davenport	T.	3.0
Des Moines	0	8.0
Dubuque	T.	12.0
Keokuk	2	†
Sioux City	0	†
Kansas.		
Concordia	T.	.....
Dodge City	1	.....
Ellinwood	1	.....
McPherson	2	.....
Manhattan	2	.....
Ottawa	4	.....
Topeka	2	.....
Wichita	3	.....
Kentucky.		
Louisville	2	0.0
Maine.		
Bangor	T.	12.0
Buckfield	T.	.....
Cornish	1	.....
Eastport	1	0.0
Gardiner	3	4.0
Greenville	4	24.5
Lewiston	3	12.0
Millinocket	4	.....
Portland	6	0.0
Van Buren	2	.....
Maryland.		
Darlington	1	.....
Frederick	1	.....
Massachusetts.		
Boston	5	.....
Fitchburg	5	.....
Mansfield	3	.....
Michigan.		
Alpena	3	*†
Battle Creek	2	.....
Cadillac	8	.....
Calumet	30	.....
Detroit	1	6.0
Escanaba	5	17.0
Harrisville	3	.....
Houghton	37	14.0

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Cont'd	*Inches*	*Inches*
Iron Mountain	5	.....
Iron River	9	.....
Ironwood	17	.....
Lansing	T.	.....
Ludington	3	†
Mancelona	13	.....
Manistee	3	.....
Marquette	14	0.0
Newberry	5	.....
Port Huron	T.	4.0
Saginaw	T.	8.0
St. Ignace	10	.....
Sault Ste. Marie	10	10.0
South Haven	2	.....
Minnesota.		
Angus	4	.....
Duluth	9	24.0
Ely	13	.....
Fort Ripley	5	.....
Hinckley	8	.....
Mankato	T.	.....
Milan	T.	.....
Minneapolis	2	.....
Moorhead	11	29.0
St. Paul	2	18.0
Virginia	5	.....
Missouri.		
Brunswick	4	.....
Columbia	3	.....
Hannibal	3	*†
Ironton	4	.....
Kansas City	3	*
Lamar	4	.....
Maryville	1	.....
Pacific	4	.....
Rolla	6	.....
St. Joseph	1	*
St. Louis	4	*
Springfield	6	.....
Unionville	1	.....
Montana.		
Havre	2	.....
Helena	2	.....
Kalispell	11	.....
Miles City	T.	.....
Missoula	12	.....
Nebraska.		
Omaha	0	6.0
Valentine	T.	.....
New Hampshire.		
Bethlehem	1	.....
Concord	4	†
New Jersey.		
Newton	1	.....
New Mexico.		
Santa Fe	3	.....
New York.		
Albany	5	†
Binghamton	4	.....
Buffalo	3	†
Canton	T.	.....
Cutchogue	T.	.....
Herkimer	2	.....
Ithaca	3	.....
King Ferry	3	.....
Lowville	2	.....
New York	T.	.....
Oswego	2	0.0
Poughkeepsie	5	.....
Rochester	T.	0.0
Rome	2	.....
Saranac Lake	2	.....
Setauket	T.	.....
Syracuse	3	.....
Warwick	2	.....
Watertown	2	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
North Dakota.	*Inches*	*Inches*
Bismarck	3	27.0
Devils Lake	3	.....
Williston	1	30.0
Ohio.		
Bangorville	3	.....
Cadiz	4	.....
Canton	4	.....
Cincinnati	5	0.0
Cleveland	4	*
Columbus	4	.....
Dayton	3	.....
Garrettsville	6	.....
Sandusky	4	2.0
Tiffin	8	.....
Toledo	3	3.5
Waverly	1	.....
Oklahoma.		
Oklahoma	7	.....
Oregon.		
Baker	2	.....
Pennsylvania.		
Erie	4	1.0
Franklin	2	.....
Greenville	5	.....
Harrisburg	1	*
Indiana	2	.....
Meadville	5	.....
Parkers Landing	2	.....
Pittsburg	3	*
Reading	1	0.0
Saltsburg	1	.....
Scranton	3	.....
Stroudsburg	2	.....
Towanda	T.	.....
Warren	1	.....
Rhode Island.		
Kingston	1	.....
Providence	2	0.0
South Dakota.		
Huron	T.	20.0
Pierre	T.	†
Rapid City	2	.....
Yankton	0	10.0
Texas.		
Amarillo	1	.....
Utah.		
Modena	T.	.....
Vermont.		
Brattleboro	2	†
Burlington	T.	0.0
Northfield	1	.....
St. Johnsbury	2	.....
Virginia.		
Dale Enterprise	T.	.....
Mount Weather	T.	.....
Winchester	T.	.....
Washington.		
Spokane	17	.....
Walla Walla	9	.....
West Virginia.		
Bayard	1	.....
Elkins	T.	0.0
Hinton	T.	.....
Parkersburg	1	0.0
Rowlesburg	1	.....
Wisconsin.		
Green Bay	3	9.5
La Crosse	2	17.0
Madison	2	.....
Wyoming.		
Cheyenne	T.	.....
Lander	4	.....
Sheridan	6	.....
Yellowstone Park	22	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. T. indicates trace.

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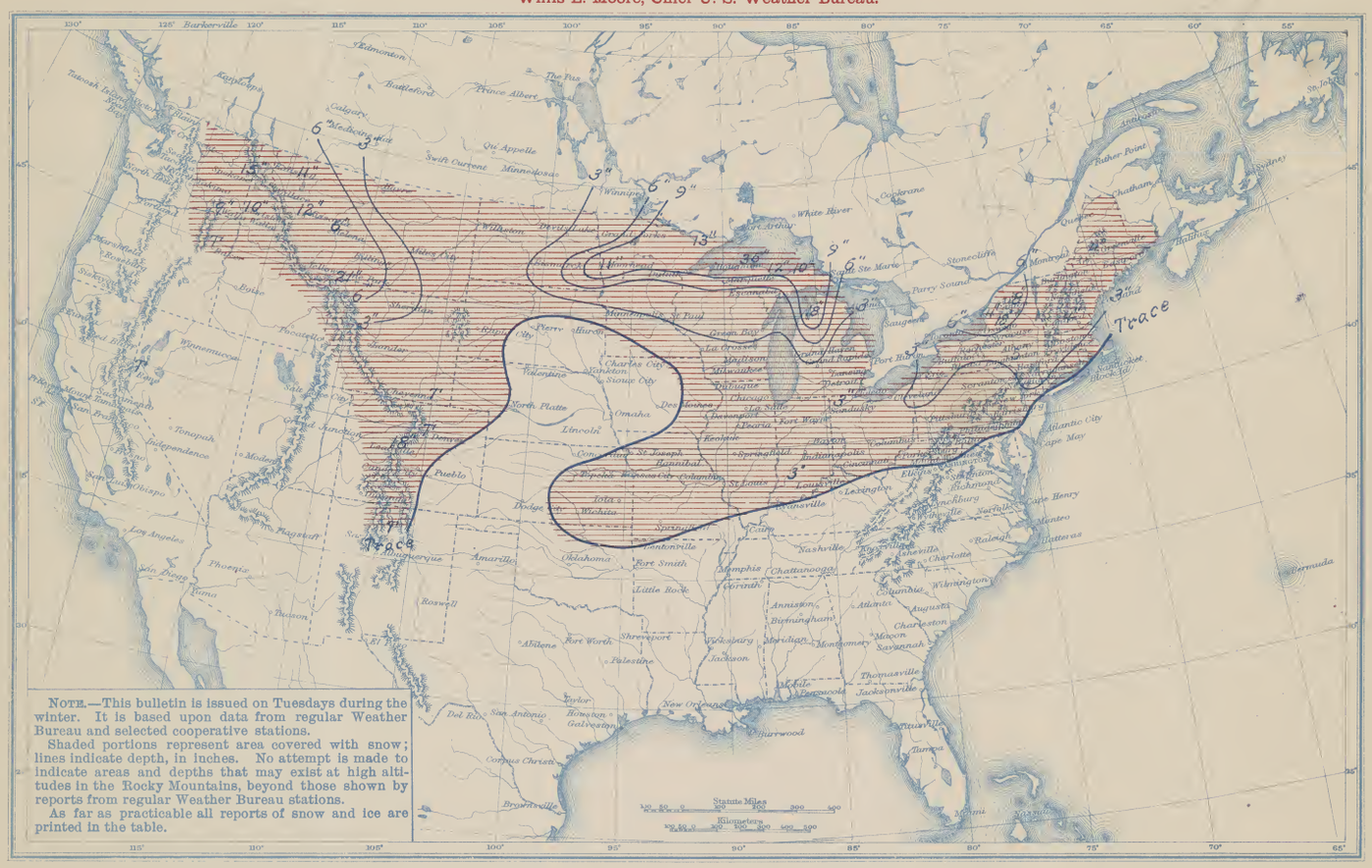

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As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 11, 1913.*

DEPTH OF SNOW.

At the end of the preceding week rain or snow was general over the more eastern districts and snow was falling in the far Northwest. The weather soon cleared, however, and, save for light flurries at widely scattered points, but little snow occurred in any district during the week until the close, when precipitation became general from the southern Plains and west Gulf States northeastward to the Atlantic coast, with local snows in the Lake region, New England, and the northern portions of the Middle Atlantic States.

Despite the continued moderately cold weather of the past week considerable of the snow covering shown on the last bulletin has disappeared over the more southern districts, especially from the middle Plains region eastward to the Ohio Valley, where the decrease in depth ranged from 3 to 6 inches.

In New England and the northern portions of New York there was a very general increase in the snow depth, especially in the Adirondack Mountain regions, where the depths are now from 12 to 18 inches. Moderate depths of snow still cover the northern portions of Michigan and thence westward over Wisconsin and Minnesota to North Dakota, but there is little snow over the great winter wheat-growing States.

There was but little snow during the week in the western mountain districts, but the considerable body of snow on the ground at the beginning of the week in the northern Rocky Mountain and northern Plateau districts still remains. The ground in those districts has been heavily snow covered for several weeks.

But little snow covers the lower elevations of the middle and southern Rocky Mountain and Plateau regions, and the amounts stored in the high ranges continue less than normal in most of those districts.

THICKNESS OF ICE.

Since the issue of last week's bulletin, moderately cold weather has prevailed in all districts to the eastward of the Rocky Mountains, and during much of the time it was cold also to the westward of the mountains, especially over the more northern districts.

With the further continuation of freezing temperatures considerable additional ice has formed over the rivers and lakes of the more northern districts, and some ice has formed at points farther south than previously reported during the winter.

In the upper Missouri the increase during the week ranged generally from 2 to 6 inches, and similar increases were noted in the upper and portions of the middle Mississippi Valley. Floating ice is reported in the Mississippi River as far south as Cairo, and shore or floating ice is reported from points on the Ohio and its tributaries and on the rivers of the Middle Atlantic States.

The first appreciable amount of ice so far this season is now reported from the Hudson River, where at Albany a thickness of 4 inches is recorded. On the streams and lakes of New England there was a general increase of several inches, and ice of moderate thickness is now being harvested.

In the Lake region there was a very general increase of from 3 to 6 inches and most of the harbors are now ice covered, the thickness ranging from 5 to 9 inches in the lower Lakes, and from 10 to 28 inches in the upper Lakes.

The following special reports have been received:

Brattleboro, Vt., February 10.—The Connecticut River is frozen over. The ice harvest has begun on ponds, where the ice is from 10 to 12 inches thick.

Hartford, Conn., February 11.—In the Connecticut and Housatonic valleys the snow averages 3 inches deep. Navigation on the Connecticut River was closed on the 4th by ice jams.

New Haven, Conn., February 10.—Ice on the ponds in this vicinity measures from 5 to 6 inches in thickness.

Albany, N. Y., February 11.—The snow averages 3 inches in depth in the Hudson and Mohawk valleys. In the rivers the ice is 4 inches thick.

Binghamton, N. Y., February 11.—In the upper Susquehanna River watershed the snow averages 4 and in the Unadilla, Chenango, and Tioughnioga watersheds 5 inches in depth.

Hannibal, Mo., February 10.—The channel of the Mississippi River here is open below the bridge.

Yankton, S. Dak., February 10.—The channel of the Missouri River is open 1 mile south of this place.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 10, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arkansas.	*Inches*	*Inches*	*Michigan*—Cont'd	*Inches*	*Inches*	*North Dak.*—Con.	*Inches*	*Inches*
Bentonville	T.	.....	Iron Mountain	5	.....	Devils Lake	2	.....
Colorado.			Iron River	9	.....	Grand Forks	4	.....
Denver	T.	.....	Lansing	T.	.....	Williston	1	33.0
Leadville	18	.....	Ludington	3	†	*Ohio.*		
Connecticut.			Mancelona	18	.....	Bangorville	4	.....
Hartford	3	0.0	Marquette	12	7.0	Canton	1	.....
New Haven	1	0.0	Newberry	6	.....	Cincinnati	1	0.0
District of Columbia.			Port Huron	T.	9.0	Cleveland	T.	0.0
Washington	0	*	Saginaw	T.	10.0	Columbus	T.	.....
Idaho.			St. Ignace	10	.....	Dayton	1	.....
Lewiston	10	†	Sault Ste. Marie	13	12.0	Garrettsville	3	.....
Illinois.			South Haven	1	.....	Philo	4	.....
Bloomington	1	.....	*Minnesota.*			Sandusky	T.	8.0
Cairo	0	*	Angus	4	.....	Tiffin	2	.....
La Salle	T.	7.0	Collegeville	10	.....	Toledo	T.	7.0
Olney	2	.....	Duluth	9	28.0	Wauseon	3	.....
Peoria	T.	5.0	Ely	13	.....	Youngstown	1	.....
Springfield	T.	.....	Fergus Falls	10	.....	*Pennsylvania.*		
Indiana.			Fort Ripley	5	.....	Bethlehem	T.	.....
Bloomington	3	.....	International Falls	13	.....	Center Hall	2	.....
Fort Wayne	1	.....	Minneapolis	2	.....	Drifton	2	.....
Indianapolis	1	.....	Moorhead	11	30.0	Emporium	2	.....
Knox	1	.....	Reeds	3	.....	Erie	2	7.5
La Fayette	2	.....	St. Paul	1	19.0	Everett	T.	.....
Marion	2	.....	Virginia	4	.....	Franklin	3	.....
Paoli	2	.....	*Missouri.*			Greenville	3	.....
Richmond	1	.....	Columbia	T.	.....	Hanover	1	.....
Seymour	1	.....	Hannibal	T.	6.0	Harrisburg	1	*
Terre Haute	0	†	Ironton	2	.....	Johnstown	4	.....
Winona Lake	2	.....	Kansas City	T.	0.0	Lawrenceville	2	.....
Iowa.			Pacific	1	.....	Parkers Landing	3	.....
Davenport	T.	11.0	St. Joseph	T.	0.0	Pittsburg	2	0.0
Des Moines	0	12.0	St. Louis	0	*	Reading	T.	†
Dubuque	T.	14.5	Springfield	T.	.....	Ridgway	2	.....
Keokuk	T.	†	*Montana.*			Saltsburg	1	.....
Sioux City	0	†	Havre	2	.....	Scranton	1	.....
Kansas.			Helena	6	.....	Selinsgrove	2	.....
Anthony	2	.....	Kalispell	11	.....	Somerset	1	.....
Iola	T.	3.0	Missoula	12	.....	Towanda	2	.....
Topeka	T.	.....	*Nebraska.*			Warren	4	.....
Wichita	T.	.....	North Platte	T.	.....	*Rhode Island.*		
Kentucky.			Omaha	0	6.0	Kingston	1	.....
Louisville	T.	0.0	*New Hampshire.*			Providence	2	0.0
Owensboro	T.	.....	Bethlehem	3	.....	*South Dakota.*		
Maine.			Concord	3	7.0	Huron	0	23.0
Bangor	2	16.0	Keene	4	.....	Pierre	0	†
Buckfield	3	.....	West Stewartstown	4	.....	Rapid City	2	.....
Cornish	3	.....	*New Jersey.*			Yankton	0	16.0
Eastport	T.	0.0	Newton	3	.....	*Vermont.*		
Gardiner	3	10.0	*New Mexico.*			Brattleboro	3	‡
Greenville	4	27.0	Santa Fe	T.	.....	Burlington	2	3.5
Lewiston	T.	13.0	*New York.*			Northfield	1	.....
Portland	6	0.0	Albany	2	4.0	St. Johnsbury	6	.....
Maryland.			Binghamton	2	.....	*Washington.*		
Frederick	T.	.....	Bouckville	6	.....	Spokane	15	.....
Oakland	1	.....	Buffalo	4	7.0	Walla Walla	9	.....
Massachusetts.			Canton	1	.....	*West Virginia.*		
Adams	3	.....	Cooperstown	4	.....	Elkins	T.	†
Boston	3	.....	Herkimer	3	.....	Fairmont	1	.....
Concord	5	.....	Ithaca	3	.....	Parkersburg	T.	*
Fitchburg	4	.....	King Ferry	2	.....	*Wisconsin.*		
Mansfield	4	.....	Lake Placid	8	.....	Ashland	9	.....
Nantucket	0	†	Lowville	18	.....	Eau Claire	6	.....
Michigan.			Ogdensburg	1	.....	Green Bay	2	11.5
Alpena	3	8.0	Oswego	7	4.5	Hancock	3	.....
Battle Creek	2	.....	Oxford	5	.....	Koepenick	5	.....
Big Rapids	T.	.....	Plattsburg	1	.....	La Crosse	1	18.0
Cadillac	10	.....	Rochester	3	6.5	Lakemills	3	.....
Calumet	29	.....	Rome	4	.....	Madison	1	.....
Chatham	10	.....	Saranac Lake	8	.....	Medford	5	.....
Detroit	T.	9.0	Saratoga Springs	4	.....	New London	3	.....
Escanaba	4	21.0	Syracuse	5	.....	Spooner	5	.....
Grand Haven	T.	.....	Watertown	14	.....	Viroqua	2	.....
Grand Rapids	3	.....	Watkins	2	.....	*Wyoming.*		
Harrisville	3	.....	*North Dakota.*			Sheridan	5	.....
Houghton	35	16.5	Bismarck	3	29.0	Yellowstone Park	21	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. T. indicates trace.

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U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

SNOW AND ICE BULLETIN.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.
Willis L. Moore, Chief U. S. Weather Bureau.

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NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 18, 1913.*

DEPTH OF SNOW.

The area of rain and snow prevailing over the more eastern and southern districts at the close of the preceding week moved rapidly eastward to the Atlantic coast and was followed by clear and cool weather, which continued throughout most of the week in nearly all portions of the country.

Aside from the small amounts occurring at the first of the week and local light snows in the Lake region and portions of the North Atlantic States during the latter part, and occasional flurries in the far Northwest, but little snow appears to have occurred in any portion of the country during the entire week. As a result there was a general reduction of the snow depth in all districts where snow was reported at the end of the preceding week, save in portions of the Lake region and northern New England, where there were, as a rule, slight increases.

The slight covering over the northern portions of the winter wheat belt reported in the last issue of this bulletin has disappeared and practically the entire winter wheat growing area is now without snow cover. However, the temperature changes have been moderate and it is probable no material damage has occurred.

A considerable body of snow now covers the region from northern Michigan westward to eastern North Dakota, but the heavy blanket that has covered portions of western Montana, northern Idaho, and eastern Washington for several weeks was greatly reduced during the past week at the lower levels. At the high elevations in those districts and including portions of Oregon the snowfall during the winter so far has been quite heavy, especially during January, and the amount stored in the mountains is the heaviest in a number of years.

In the middle portions of the mountain and Plateau districts the snowfall continues generally much below the normal, but in the more southern portions there has been a normal fall in many localities, and on account of the generally cold weather the precipitation that usually falls as rain has this year been in the form of snow. There is now a fairly average amount stored in the higher mountains, and the soil at the lower elevations is reported as well supplied with moisture from the melted snow.

THICKNESS OF ICE.

During the week just past moderate winter temperatures have prevailed in nearly all districts and there has been a further small increase in the amounts of ice in the rivers and lakes of most northern districts. To the southward, however, there has been a slight decrease, and at a few points on the lower Missouri and middle Mississippi rivers there is now less ice than at the beginning of the week, and similar conditions prevail on some of the rivers of the Middle Atlantic States.

There were slight increases during the week, as a rule, in the upper Missouri and its tributaries, but in the upper Mississippi there was but little change.

There is no appreciable amount of ice in the Ohio River and only shore ice is reported on the rivers of the Atlantic coast south of the Hudson.

In New England there was a general increase of several inches in the thickness of ice on the lakes and streams, especially in the interior and northern portions, and ice of good quality is now being harvested in many sections under very favorable weather conditions.

In the Lake region there was a uniform increase of from 1 to 2 inches in the thickness over that reported last week, and from 6 to 10 inches of ice now covers the harbors of the lower Lakes, while in the upper Lakes the thickness ranges generally from 10 to 25 inches.

Compared with the same date last year there is everywhere much less ice now than then, except in the upper Missouri Valley, where the amounts at the present time are equal to and at a few points in excess of those reported last year.

The following special reports have been received:

Gardiner, Me., February 17.—The ice harvest from the Kennebec River here commenced on the 18th. The ice is of fine quality and conditions are favorable for a good crop.

Brattleboro, Vt., February 17.—The ice harvest has begun.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 17, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Michigan*—Cont'd	*Inches*	*Inches*	*North Dakota.*	*Inches*	*Inches*
Flagstaff	T.	.....	Manistee	3	.....	Bismarck	T.	30.0
Colorado.			Marquette	17	6.0	Devils Lake	T.	.....
Durango	T.	.....	Newberry	9	.....	Grand Forks	3	.....
Leadville	15	.....	Port Huron	1	11.0	Williston	T.	32.5
Connecticut.			Rock	20	.....	*Ohio.*		
Hartford	T.	†	Saginaw	1	10.0	Bangorville	2	.....
New Haven	T.	0.0	Sault Ste. Marie	14	13.0	Canton	2	.....
West Cornwall	2	.....	*Minnesota.*			Cleveland	1	7.0
West Simsbury	2	.....	Angus	6	.....	Garrettsville	2	.....
Idaho.			Collegeville	6	.....	Sandusky	T.	8.0
Lewiston	2	0.0	Duluth	9	29.0	Tiffin	1	.....
Pocatello	T.	.....	Ely	17	.....	Toledo	T.	8.0
Illinois.			Fergus Falls	5	.....	Wauseon	T.	.....
La Salle	0	8.0	Fort Ripley	4	.....	*Oregon.*		
Indiana.			Hinckley	7	.....	Baker	T.	.....
Fort Wayne	T.	.....	International Falls	15	.....	*Pennsylvania.*		
Knox	T.	.....	Mankato	T.	.....	Center Hall	1	.....
Terre Haute	0	†	Minneapolis	T.	.....	Emporium	T.	.....
Winona Lake	T.	.....	Moorhead	8	33.0	Erie	T.	9.0
Iowa.			St. Paul	T.	17.0	Everett	T.	.....
Davenport	0	7.5	State Sanatorium	11	.....	Harrisburg	T.	0.0
Des Moines	0	11.0	Virginia	5	.....	Huntingdon	T.	.....
Dubuque	0	14.5	*Missouri.*			Lawrenceville	T.	.....
Keokuk	0	†	Hannibal	0	†	Philadelphia	0	†
Sioux City	0	†	St. Joseph	0	*	Pittsburg	1	0.0
Kansas.			*Montana.*			Scranton	T.	.....
Iola	0	1.5	Kalispell	4	.....	Selinsgrove	1	.....
Maine.			Miles City	T.	.....	Towanda	T.	.....
Bangor	10	20.0	Missoula	6	.....	Williamsport	T.	.....
Buckfield	4	.....	*Nebraska.*			*Rhode Island.*		
Eastport	3	0.0	Omaha	0	‡	Narragansett Pier	T.	.....
Gardiner	4	14.0	*Nevada.*			Providence	T.	0.0
Greenville	9	28.5	Reno	T.	0.0	*South Dakota.*		
Lewiston	2	14.0	*New Hampshire.*			Huron	0	22.0
Orono	8	.....	Bethlehem	4	.....	Pierre	0	†
Portland	5	0.0	Concord	T.	12.0	Yankton	0	14.0
Maryland.			Hanover	2	.....	*Vermont.*		
Easton	T.	.....	Keene	2	.....	Brattleboro	1	12.0
Frederick	1	.....	*New Jersey.*			Burlington	T.	10.0
Oakland	2	.....	Bridgeton	T.	.....	Northfield	1	.....
Princess Anne	T.	.....	Cape May	0	0.5	St. Johnsbury	6	.....
Massachusetts.			*New Mexico.*			*Washington.*		
Adams	2	.....	Santa Fe	T.	.....	Spokane	7	.....
Concord	2	.....	*New York.*			*West Virginia.*		
Fitchburg	T.	.....	Albany	T.	8.0	Bayard	3	.....
Mansfield	T.	.....	Binghamton	1	.....	Elkins	T.	0.0
Michigan.			Buffalo	1	8.0	Parkersburg	0	*
Alpena	7	10.0	Canton	4	.....	*Wisconsin.*		
Battle Creek	T.	.....	Cooperstown	2	.....	Eau Claire	4	.....
Big Rapids	5	.....	Ithaca	T.	.....	Green Bay	2	11.5
Calumet	33	.....	King Ferry	3	.....	Hancock	2	.....
Detroit	T.	10.0	Lowville	12	.....	Koepenick	6	.....
Escanaba	6	22.5	Ogdensburg	6	.....	La Crosse	0	18.0
Grand Haven	T.	.....	Oswego	8	6.5	Medford	4	.....
Grand Rapids	T.	.....	Oxford	3	.....	New London	T.	.....
Harrisville	8	.....	Rochester	3	8.0	Sheboygan	T.	.....
Houghton	38	18.0	Rome	3	.....	Spooner	4	.....
Iron River	15	.....	Syracuse	5	.....	Viroqua	1	.....
Ironwood	17	.....	Watertown	12	.....	*Wyoming.*		
Lansing	T.	.....	Watkins	1	.....	Lander	T.	.....
Ludington	2	†	*North Carolina.*			Sheridan	T.	.....
Mancelona	15	.....	Raleigh	T.	.....	Yellowstone Park	19	.....

* Floating ice. † Shore ice. ‡ Measurement impracticable. T. indicates trace.

Hartford, Conn., February 18.—The depth of snow averages 6 inches in the extreme upper Connecticut Valley. In the remainder of the Connecticut and Housatonic valleys it averages 2 inches. The streams are closed and ice harvesting is in progress.

Albany, N. Y., February 18.—In the Hudson Valley the snow averages 1 inch and in the Mohawk 2 inches deep. The ice averages about 8 inches in each river. Harvesting of ice has begun.

Binghamton, N. Y., February 18.—In the upper Susquehanna watershed the snow averages 2 inches and in the Unadilla, Chenango, and Tioughnioga watersheds 3 inches in depth.

P. C. DAY, *Climatologist and Chief of Division.*

U. S. DEPARTMENT OF AGRICULTURE,
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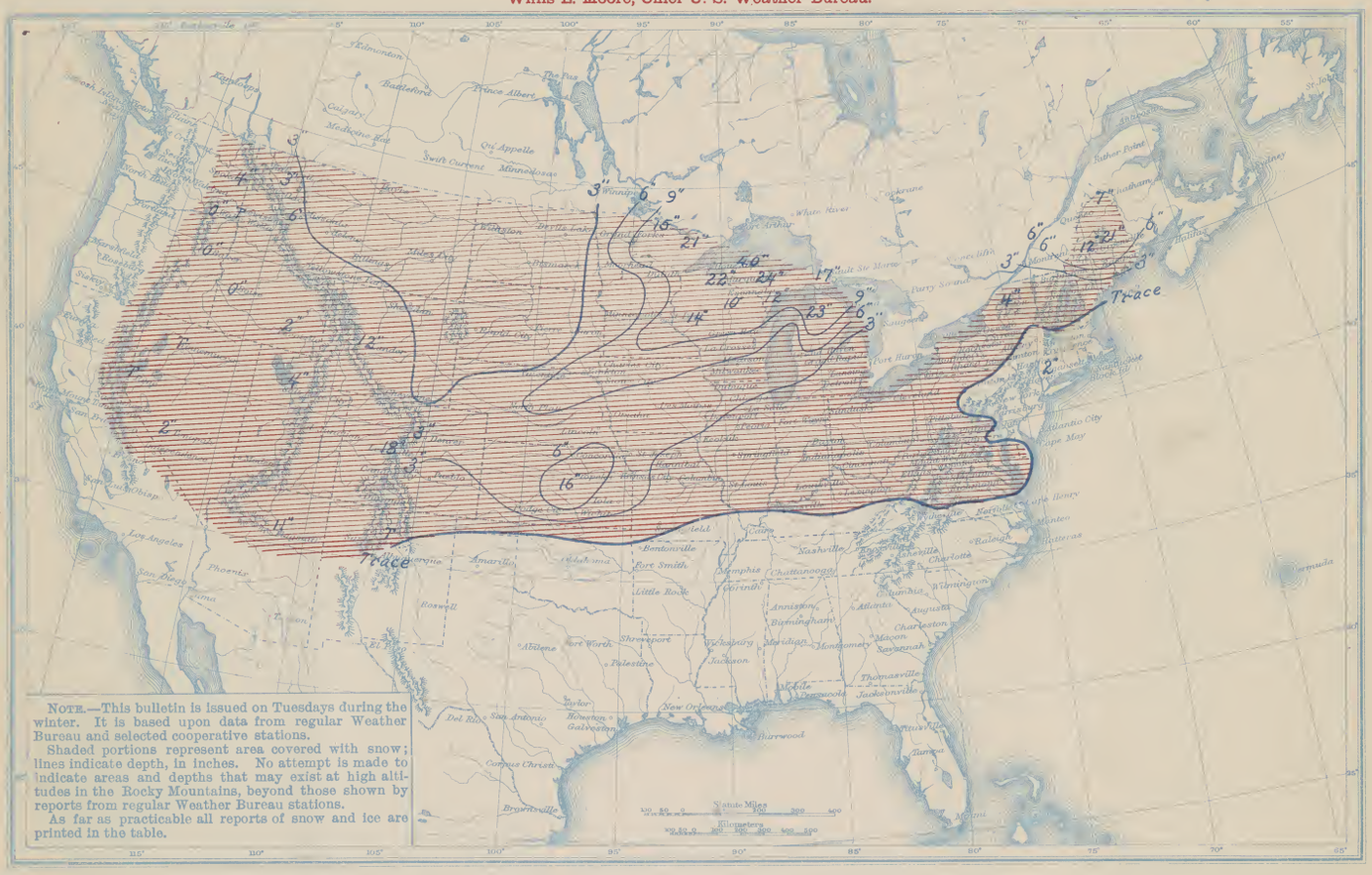
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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.
As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 25, 1913.*

DEPTH OF SNOW.

During the early part of the week no general storm passed over the country and only light snow occurred in any district. On Wednesday and Thursday, however, low pressure prevailed in the southern Rocky Mountain and southern Plateau regions and moderate amounts of snow occurred at the lower elevations of those districts, and it is probable heavy falls occurred in the high mountains. This low-pressure area gradually moved to the Plains region by Friday and to the Great Lakes by Saturday, with greatly increased energy. Heavy snow and high winds occurred in connection with this storm, the fall of snow being quite general from the middle Plains region northeastward over the lower Missouri and upper Mississippi valleys to the upper Lakes. At the end of the week light snows occurred in the Appalachian Mountain regions of Kentucky and the two Virginias and thence eastward to the Atlantic coast.

Small amounts of snow disappeared during the week in the Atlantic coast States from Maryland northward to New England, and there was a slight reduction in the depth at points in the Valley of the Red River of the North. Likewise there was a general reduction in the depth over portions of eastern Washington and northern Idaho, where the ground at the lower levels has been snow covered for an unusual length of time.

There is now a fairly good snow cover over most of the winter wheat area to the westward of the Mississippi, which should prove of great benefit to the wheat plant from the protection afforded, and from the much needed moisture that will result from its melting. To the eastward of the Mississippi the winter wheat districts have but a slight covering in any, and practically none over the greater portion of the area.

In the mountains of the West there has been a considerable addition to the stock of snow in the middle and southern districts of the Rocky Mountain and Plateau regions, where the accumulated amounts had previously been much below the normal, and there appears to be an abundance in the more northern districts. In California and Nevada, however, there appears to have been but little snow during the week and the amounts stored in the mountains of those States continue below the normal.

THICKNESS OF ICE.

A change to warmer weather during much of the week just passed prevented the formation of any appreciable amount of ice in the rivers and lakes of the country, save over extreme northern districts; and warm rains during the latter part of the week reduced considerably the amounts previously reported on the streams of the middle Missouri and middle Mississippi valleys and in the lower Lake region.

No increase in the amount of ice on the Missouri or its tributaries appears to have occurred during the week, and there was a reduction of several inches in the thickness of the ice reported throughout the upper Mississippi and its tributaries.

No ice formed during the week in the Ohio or its tributaries, or in the streams of the Atlantic coast as far north as the Hudson.

In New England there was a general increase of several inches and similar conditions obtained in the upper Lake region, but in the lower Lakes there was a considerable reduction in the amount of ice as compared with that reported last week, especially along the southern shore of Lake Erie.

The cool, clear weather now prevailing in New England and the northern districts generally affords excellent conditions for ice harvesting.

At the same period last year all the streams and lakes in which ice usually forms were heavily covered.

The following special reports have been received:

Brattleboro, Vt., February 24.—There is snow back on the hills.

Albany, N. Y., February 25.—There is no snow in the Hudson Valley, but there is a little in the Mohawk, Utica reporting the greatest depth, 2 inches. The ice averages 8 inches thick in each river.

Keokuk, Iowa, February 24.—The floating ice has packed upstream, so there is no ice in the river here.

Williston, N. Dak., February 24.—The ice in the Missouri River here is covered with water which has run out from the Yellowstone River.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 24, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
	Inches	Inches		Inches	Inches		Inches	Inches
Arizona.			*Michigan*—Cont'd			*New York.*		
Flagstaff	11	.....	Detroit	T.	10.0	Addison	T.	.....
Arkansas.			Escanaba	12	23.0	Albany	0	8.0
Bentonville	T.	.....	Grand Haven	2	.....	Binghamton	T.	.....
Colorado.			Grand Rapids	5	.....	Buffalo	2	10.0
Denver	3	.....	Houghton	40	19.0	Canton	1	.....
Leadville	18	.....	Ironwood	22	.....	Little Falls	1	.....
Pueblo	2	.....	Lansing	5	.....	Oswego	2	8.0
Connecticut.			Ludington	5	†	Oxford	1	.....
Hartford	0	†	Mackinaw	24	.....	Plattsburg	1	.....
West Cornwall	2	.....	Mancelona	23	.....	Rochester	1	7.5
Delaware.			Manistee	4	.....	Saranac Lake	4	.....
Millsboro	T.	.....	Marquette	24	7.0	Syracuse	T.	.....
District of Columbia.			Newberry	9	.....	Utica	2	.....
Washington	T.	0.0	Port Huron	1	11.0	*North Dakota.*		
Idaho.			Saginaw	2	12.0	Bismarck	T.	30.0
Lewiston	T.	0.0	Sault Ste. Marie	17	14.0	Devils Lake	T.	.....
Pocatello	2	.....	South Haven	3	.....	Williston	T.	‡
Illinois.			*Minnesota.*			*Ohio.*		
Chicago	T.	.....	Angus	4	.....	Cincinnati	T.	0.0
Hillsboro	1	.....	Collegeville	4	.....	Cleveland	1	1.0
La Salle	0	§	Duluth	10	32.0	Columbus	T.	.....
Olney	1	.....	Ely	21	.....	Dayton	T.	.....
Peoria	3	0.0	Fort Ripley	3	.....	Sandusky	T.	†
Springfield	T.	.....	Glencoe	5	.....	Toledo	1	3.5
Winnebago	4	.....	Grand Meadow	5	.....	*Pennsylvania.*		
Indiana.			Hinckley	8	.....	Clarion	1	.....
Evansville	T.	0.0	International Falls	15	.....	Erie	T.	5.0
Indianapolis	T.	.....	Mankato	10	.....	Parkers Landing	1	.....
Mount Vernon	1	.....	Minneapolis	7	.....	Pittsburg	T.	*
Paoli	1	.....	Moorhead	6	34.0	Warren	1	.....
Iowa.			New Richland	5	.....	*South Dakota.*		
Atlantic	4	.....	Reeds	11	.....	Huron	2	17.5
Charles City	8	.....	St. Paul	6	15.0	Pierre	1	†
Davenport	2	4.0	State Sanatorium	11	.....	Rapid City	2	.....
Des Moines	4	10.0	Worthington	4	.....	Yankton	8	12.0
Dubuque	3	‡	*Missouri.*			*Utah.*		
Forest City	8	.....	Brunswick	1	.....	Salt Lake City	4	.....
Humboldt	6	.....	Clinton	6	.....	*Vermont.*		
Sioux City	5	†	Columbia	1	.....	Brattleboro	0	9.0
Waterloo	5	.....	Hannibal	T.	*†	Burlington	0	11.5
Kansas.			Ironton	1	.....	Northfield	1	.....
Anthony	3	.....	Kansas City	2	*	St. Johnsbury	2	.....
Concordia	5	.....	Lamar	2	.....	*Virginia.*		
Dodge City	3	.....	Maryville	5	.....	Dale Enterprise	2	.....
Ellinwood	4	.....	St. Joseph	4	*	Fredericksburg	1	.....
Iola	4	0.5	St. Louis	T.	0.0	Lynchburg	T.	0.0
Liberal	2	.....	Springfield	1	.....	Mount Weather	T.	.....
McPherson	16	.....	Trenton	4	.....	Richmond	2	0.0
Ottawa	4	.....	Unionville	6	.....	Williamsburg	1	.....
Smith Center	2	.....	*Montana.*			Woodstock	T.	.....
Topeka	6	.....	Helena	T.	.....	*Washington.*		
Wichita	7	.....	Kalispell	3	.....	Spokane	4	.....
Kentucky.			Miles City	T.	.....	*West Virginia.*		
Beattyville	1	.....	Missoula	6	.....	Bayard	1	.....
Lexington	1	.....	*Nebraska.*			Charleston	1	.....
Louisville	T.	0.0	Alliance	4	.....	Elkins	1	0.0
Maysville	2	.....	Auburn	6	.....	Parkersburg	T.	0.0
Mount Sterling	2	.....	Genoa	7	.....	*Wisconsin.*		
Maine.			Guide Rock	4	.....	Ashland	10	.....
Bangor	10	22.0	Imperial	8	.....	Eau Claire	14	.....
Buckfield	3	.....	Lincoln	5	.....	Green Bay	12	13.5
Cornish	2	.....	Minden	2	.....	Hancock	8	.....
Eastport	5	0.0	North Platte	2	.....	Koepenick	10	.....
Gardiner	3	14.0	Omaha	5	‡	La Crosse	8	16.0
Greenville	12	30.5	Valentine	1	.....	Lakemills	4	.....
Lewiston	3	15.0	York	5	.....	Madison	6	.....
Millinocket	21	.....	*Nevada.*			Medford	9	.....
Orono	10	.....	Reno	T.	0.0	Milwaukee	5	.....
Portland	T.	0.0	Tonopah	2	.....	Racine	5	.....
Van Buren	7	.....	Winnemucca	T.	.....	Sheboygan	6	.....
Michigan.			*New Hampshire.*			Spooner	7	.....
Alpena	12	13.0	Bethlehem	2	.....	Viroqua	5	.....
Battle Creek	1	.....	Concord	T.	13.0	*Wyoming.*		
Big Rapids	5	.....	West Stewartstown	6	.....	Cheyenne	2	.....
Cadillac	12	.....	*New Mexico.*			Lander	12	.....
Calumet	37	.....	Santa Fe	T.	.....	Sheridan	3	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. §Ice gorged. T. indicates trace.

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SNOW AND ICE BULLETIN.

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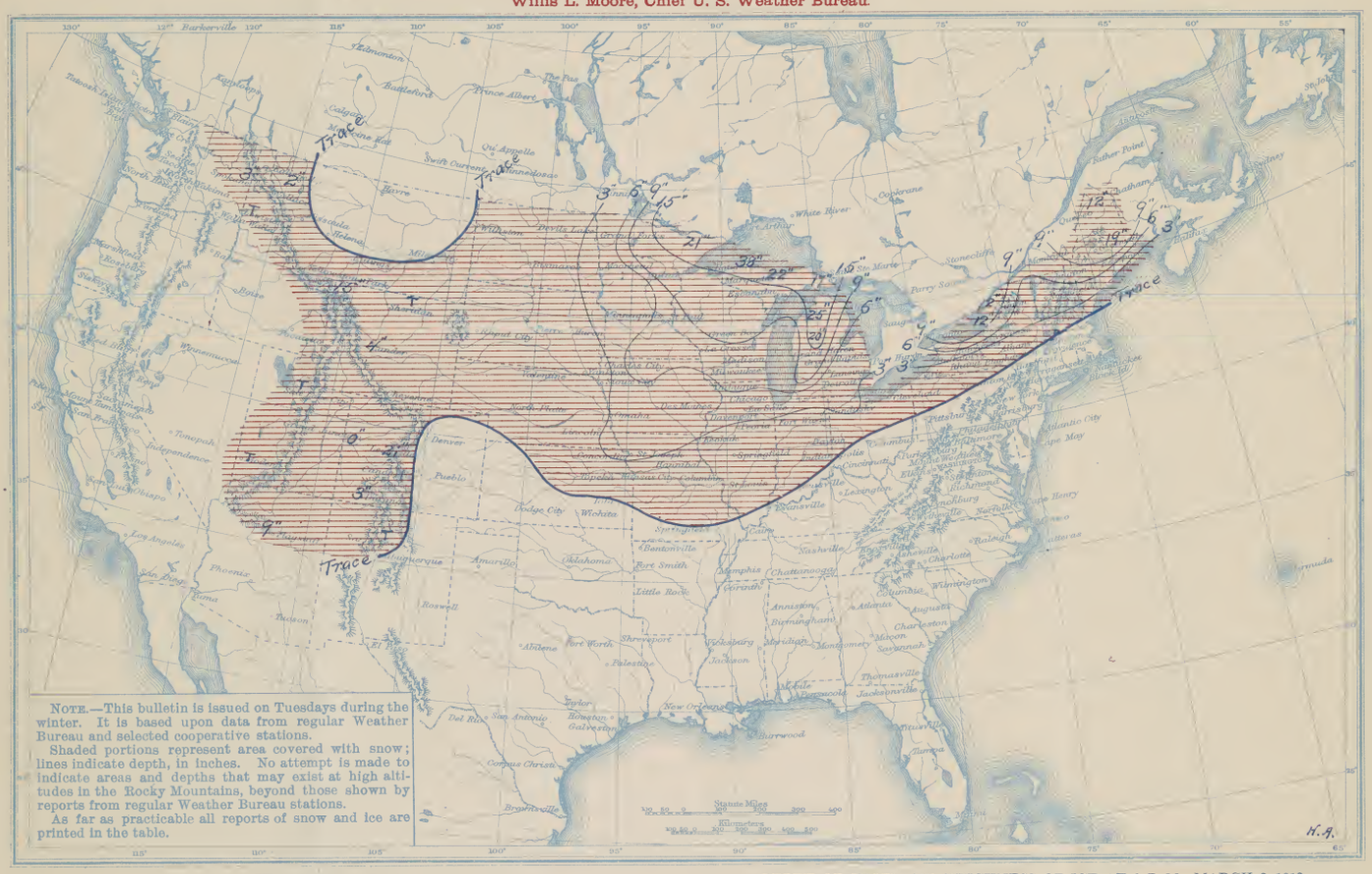
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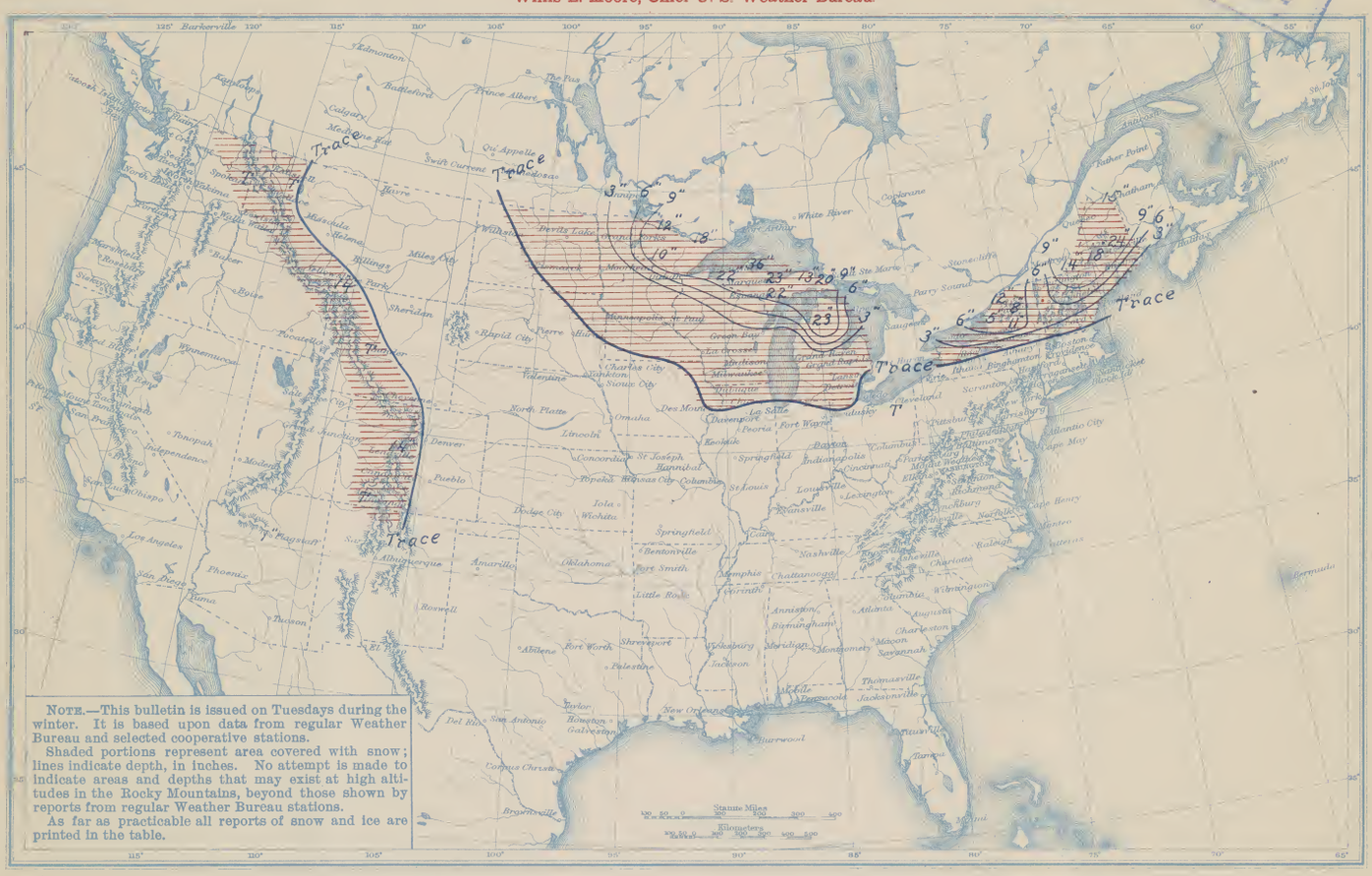
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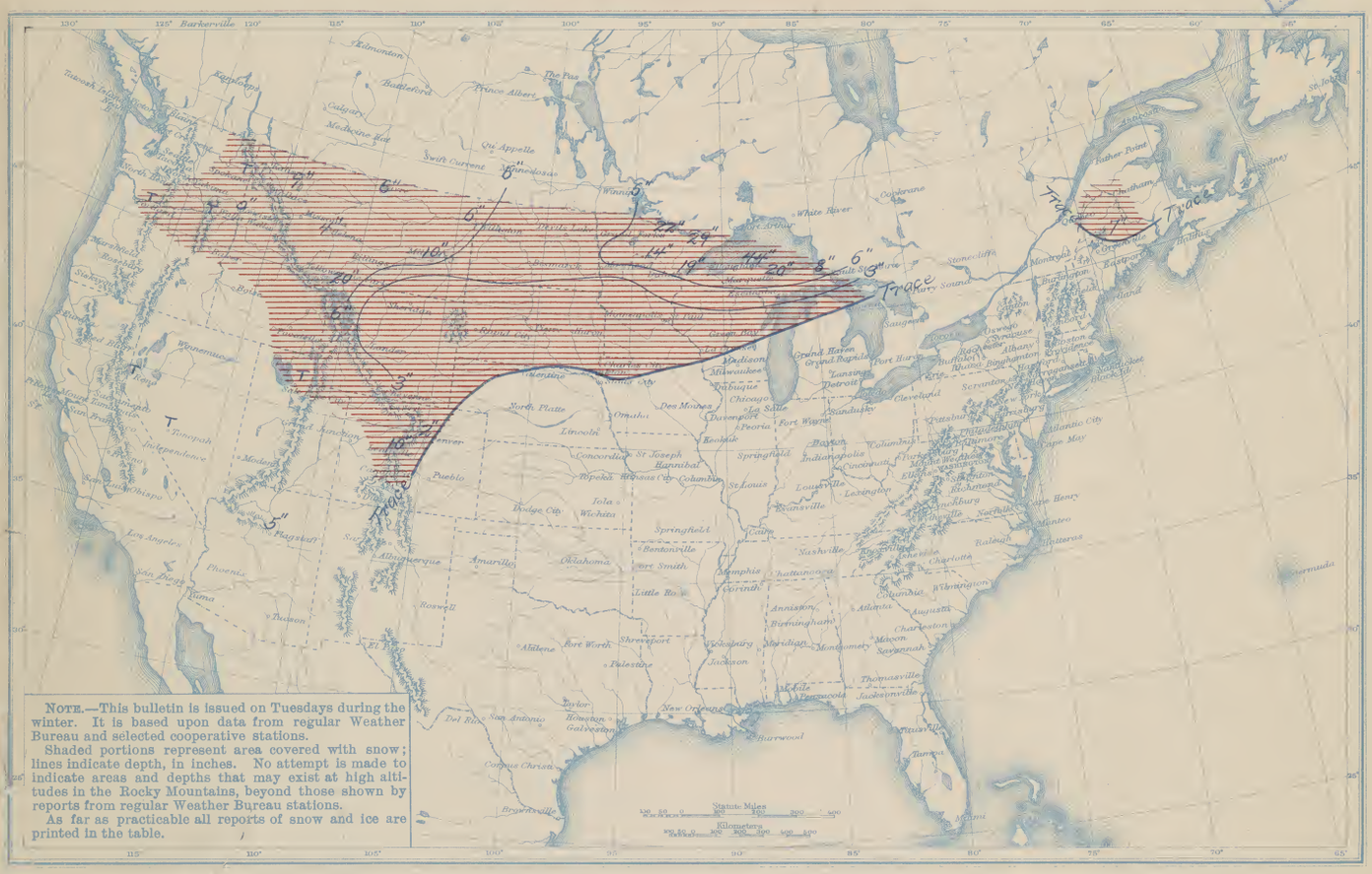

NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *March 25, 1913.*

DEPTH OF SNOW.

The stormy weather of the preceding week continued during the week just ended in even a more marked degree, and weather changes have been unusually rapid and severe, resulting in the loss of several hundred lives and the destruction of much property.

The first two days of the week just ended were warm and generally clear over the districts to the eastward of the Rocky Mountains, but stormy weather prevailed in the Northwest, with local snows along the northern border as far east as Lake Superior. By Wednesday morning an extensive disturbance had overspread the middle Rocky Mountain region, which by the following morning had moved to the Lake region, causing widespread precipitation, with some snow over the more northern districts. At the same time another storm had passed over the Plateau region, accompanied by snow in the high mountains, with severe cold to the northward. By Friday morning the storm in the Plateau region had moved to the southern Plains and thence northeastward to the Great Lakes, with greatly increased force, attended by widespread precipitation, severe gales, and much interruption to transportation and communication from drifting snow and broken electric circuits.

The storm moved rapidly down the St. Lawrence during the next 24 hours, followed by decidedly cold weather in northern and central districts. At the same time still another storm was forming in the far West, which advanced to the middle Rocky Mountains by Sunday morning as a storm of wide extent. During Sunday and Sunday night this storm moved to the upper Lakes, attended by snows in the mountain and northern districts and widespread rainfall, high winds, and local tornadoes in the Great Plains and central valleys, causing the loss of several hundred lives and immense damage to property. This storm moved to the eastward during Monday, but other storm areas have developed in the central valleys and Southwest, and within the past 24 hours heavy rains have fallen in the Ohio and middle Mississippi valleys and lower Lake region, with snow in the mountain regions of the West and locally from the Lake region westward.

The snow has practically disappeared from all eastern districts, save only in northern New England. In the districts from the upper Lakes westward to the mountains considerable snow fell during the week just past but much of it has melted, though there is still a heavy covering in the vicinity of Lake Superior, and depths of from 5 to 10 inches are reported over much of North Dakota and thence westward to the mountains.

There has doubtless been considerable snow in the mountain districts of the West not indicated from the reports at the lower levels, save in the more northern districts where the fall during the week has remained partially unmelted.

THICKNESS OF ICE.

On account of continued cold over the more northern districts the ice in the Missouri and other streams of the Northwest remained about as reported last week, and not much change occurred during the week in the ice conditions in the upper Lakes, especially Lake Superior, where the harbors are still ice bound, as well as in northern Lake Michigan and in the Straits. In the lower Lakes the ice has practically disappeared from the harbors.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., MARCH 24, 1913.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Minnesota*—Cont'd	*Inches*	*Inches*	*North Dak.*—Con'd	*Inches*	*Inches*
Flagstaff	5	.....	Fergus Falls	2	.....	Grand Forks	5	.....
Colorado.			Fort Ripley	T.	.....	Williston	6	27.5
Denver	2	.....	Glencoe	T.	.....	*Oregon.*		
Leadville	10	.....	Hinckley	4	.....	Baker	T.	.....
Idaho.			International Falls	22	.....	Portland	T.	0.0
Pocatello	1	.....	Mankato	T.	.....	*South Dakota.*		
Iowa.			Milan	1	.....	Huron	T.	‡
Charles City	T.	.....	Minneapolis	2	.....	Pierre	2	‡
Sioux City	T.	*†	Moorhead	6	34.0	Yankton	0	*†
Maine.			New Richland	T.	.....	*Utah.*		
Gardiner	0	*	St. Paul	1	†	Salt Lake City	T.	.....
Greenville	0	30.0	State Sanatorium	14	.....	*Washington.*		
Millinocket	7	.....	Virginia	12	.....	Spokane	T.	.....
Michigan.			Worthington	T.	.....	Walla Walla	T.	.....
Alpena	T.	*†	*Montana.*			*Wisconsin.*		
Chatham	10	.....	Havre	6	.....	Ashland	12	.....
Escanaba	6	26.0	Helena	4	.....	Eau Claire	T.	.....
Houghton	44	20.0	Kalispell	9	.....	Green Bay	T.	*
Iron River	T.	.....	Miles City	10	.....	Koepenick	5	.....
Ironwood	22	.....	*Nebraska.*			La Crosse	T.	0.0
Ludington	T.	†	Valentine	T.	.....	Medford	5	.....
Marquette	20	8.0	*Nevada.*			New London	T.	.....
Newberry	7	.....	Reno	T.	.....	Spooner	3	.....
Rock	10	.....	Tonopah	T.	.....	Viroqua	T.	.....
Sault Ste. Marie	8	21.0	*New York.*			Wausau	T.	.....
Minnesota.			Buffalo	0	*	*Wyoming.*		
Angus	4	.....	*North Dakota.*			Cheyenne	T.	.....
Collegeville	1	.....	Bismarck	5	20.0	Lander	T.	.....
Duluth	19	34.0	Devils Lake	1	.....	Sheridan	2	.....
Ely	29	.....				Yellowstone Park	20	.....

*Floating ice. †Shore ice. ‡Measurement impracticable. T. indicates trace.

In New England there has been a general breaking up of the ice in the lower courses of the rivers, but not much change has occurred in the central and northern districts of Maine.

The following special reports have been received; that from Detroit relates to the conditions existing throughout the Great Lakes and is a summary of a large number of reports collected at that station:

Gardiner, Me., March 24.—The snow is all gone. There is a very little floating ice in the Kennebec River.

Lewiston, Me., March 24.—No snow remains. The ice in the Androscoggin River has broken up and gone out.

Ithaca, N. Y., March 25.—No snow is reported from any part of this State.

Detroit, Mich., March 25.—In Lake Superior there are extensive ice fields in both the western and eastern portions, but there is less ice in the central. The St. Marys River is frozen over firmly, and in Green Bay there has been no change during the last week. The ice in Lake Michigan is solid in the northern part and softening in the southern end. High westerly winds are confining the ice fields to the east shore from Holland to Glenhaven and from Charlevoix to the Straits, where the ice is solid. In Lake Huron the ice fields have disappeared from the west shore and are not heavy on the east shore. The Lake Erie fields remain in the extreme eastern portion, but have been broken up by the winds, and the ice is now running down the Niagara River. In Lake Ontario the ice is confined to the extreme eastern end, with harbors open eastward to points beyond Oswego. In the Great Lakes as a whole there is less ice than at this date a year ago.

Huron, S. Dak., March 24.—The ice in the James River is honeycombed, making measurements impracticable.

Pierre, S. Dak., March 24.—The ice in the Missouri River is gorged at this point.

P. C. DAY, *Climatologist and Chief of Division.*

NOTE.—This will be the last bulletin of this series for the season of 1912–13.

Bulletins showing the condition of the ice in the Great Lakes will probably be issued from the Weather Bureau office in Detroit, Mich., for several weeks. Copies may be secured by addressing the office at that place.